

ANNUAL COMPLETION REPORT

MIGRATORY GAME BIRDS

2013

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2013 JOB COMPLETION REPORT

Species: Migratory Game Birds

Wyoming Portions of the Central and Pacific Flyways

Period Covered: September 1, 2012 - August 31, 2013

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INTRODUCTION

The Migratory Game Bird Section has operated with reduced staffing since the mid-1990s. Accordingly, surveys and other job duties have been prioritized and in some cases, suspended. During the first half of the report period, 1.5 FTEs were assigned to the section. The section was reduced to 1 FTE beginning in March, 2013.

In cooperation with the U.S. Fish and Wildlife Service, the Migratory Game Bird Section conducted the following annual surveys to derive population indices for management: September crane survey, mid-winter waterfowl survey, and mourning dove call-count survey. The Migratory Game Bird Section remains strongly involved in the Central and Pacific Flyway management efforts, including development and revision of management plans for the various migratory game bird populations and annual season setting. These processes require participation on the Flyway Technical Committees at the December/January, March, and July Flyway meetings.

The Migratory Game Bird Section is directly or indirectly involved in the management of all migratory game birds in the two Flyways. In addition, substantial personnel time was devoted to wetlands and habitat management over the past year.

During the report period a decision was made to lower the priority of banding efforts in Wyoming. However, mourning doves were banded at 4 locations. The Migratory Game Bird Section contributed funding through the Flyway membership dues, to help support the Central Flyway pre-season duck banding project in North Dakota.

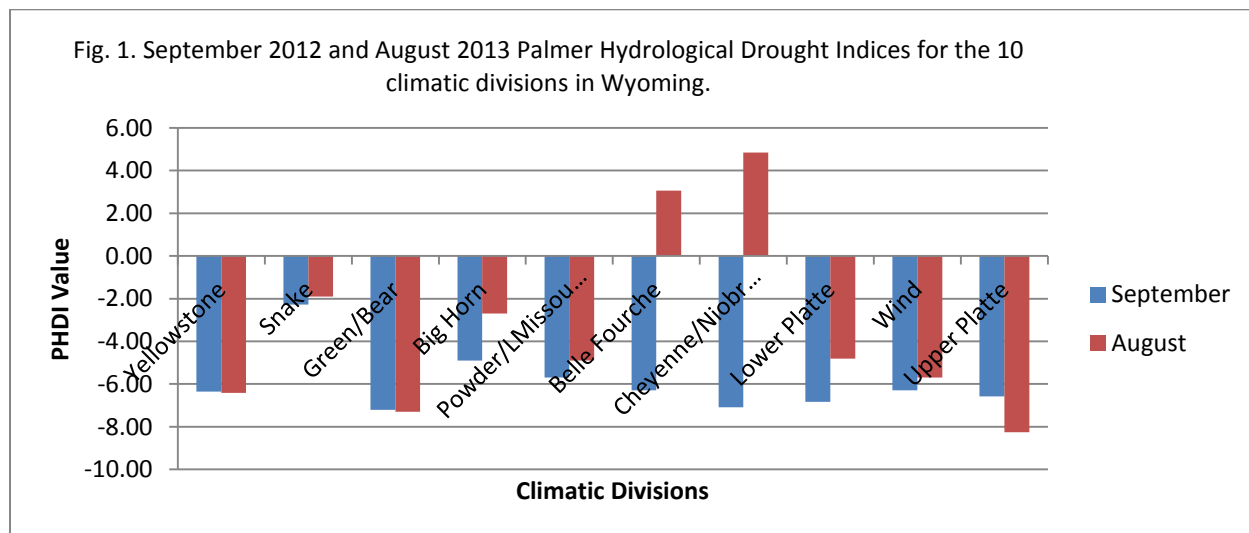
The maintenance and evaluation of over 800 goose nesting structures remains a priority throughout Wyoming. However, reductions in personnel and funding have forced the Department to reevaluate its ability to bed and maintain the structures and to eliminate less effective structures where possible.

The Bump-Sullivan managed goose hunt was initiated in 1993 to alleviate competition among hunters. The hunt was not operated from the 2002/03 through the 2009/10 dark goose-hunting season because Bump-Sullivan Reservoir was predominantly dry. The hunt was reinstated during the 2010/11 season. The hunt continued in 2012/13, but blind occupancy is on a first-come, first-served basis.

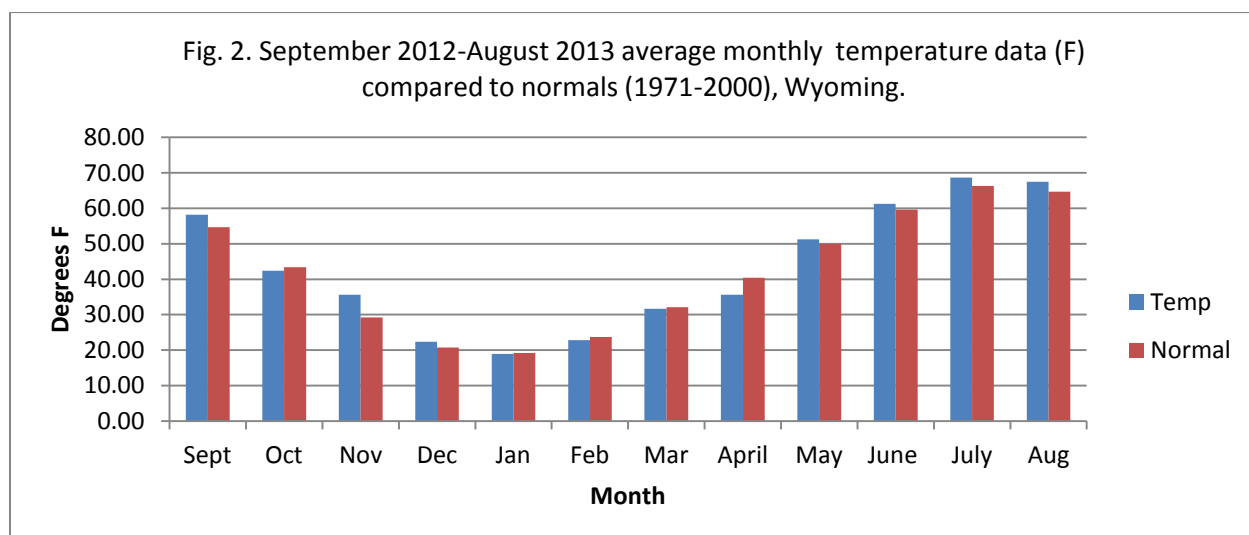
The Section participated in several migratory game bird habitat projects across the state. Local involvement was maintained in the Intermountain West Joint Venture (IWJV). The migratory game bird biologist and Alpine staff biologist participated in the Wyoming Bird Habitat Conservation Partnership, which serves both joint ventures in the state.

WEATHER/HABITAT CONDITIONS

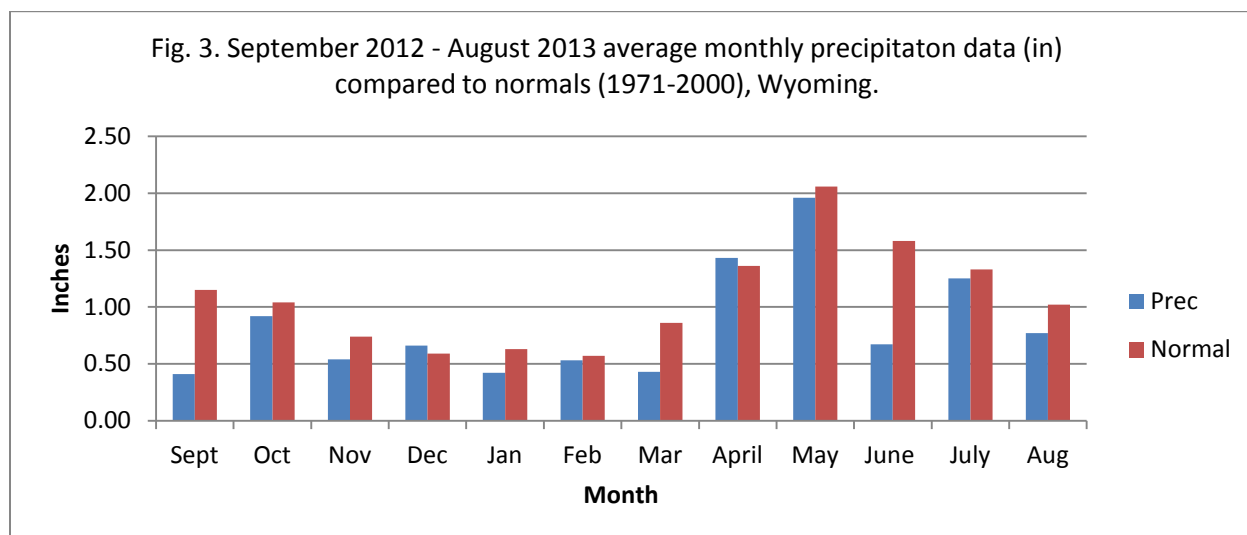
During the report period, September 2012 through August 2013, the monthly Palmer Hydrological Drought Index increased in 7 climatic divisions in the state (Fig. 1). In September 2012, all the climatic divisions were classified as being in drought. Water conditions decreased markedly in streams and wetlands throughout most of Wyoming.



Average monthly temperatures for Wyoming were above normal (1971-2000 average) during 8 months of the report period (Figure 2). The 12-month average of 43.0° F was just above normal (42.00° F).



Average monthly precipitation in Wyoming was below normal (1971-2000 average) during 10 months of the report period (Figure 3). The 12-month total of 9.99 inches was significantly below normal (12.92 in.).



During the fall of 2012, increased numbers of local and migrating waterfowl were observed throughout Wyoming. In eastern Wyoming slightly above normal temperatures in December were accompanied by slightly above normal precipitation. The November through January period was drier than normal. Lower elevation water bodies in eastern Wyoming froze in December. In western Wyoming, winter conditions were difficult for migratory game birds after late October through December. Duck populations were below normal across the state, with some localized exceptions. On the other hand, Canada goose populations were above the long term average.

During spring, 2013 brood habitat conditions deteriorated throughout most of the state. Upland habitats also deteriorated as a long-term hydrologic drought continued. Above normal temperatures and below normal precipitation during March through August may have impacted reproductive success of migratory game birds. Reproductive success of mourning doves should have improved with these weather conditions.

The computation of the June Surface Water Supply Index (SWSI) includes reservoir storage, if applicable, plus the forecast runoff. Only one drainage had adequate or surplus water supply in 2013. As of June 1, reservoir storage was 97% of average for the entire state, although storage levels varied widely at individual reservoirs.

Below normal recharge of springs and streams reduced water distribution throughout Wyoming. Uncontrolled grazing in and adjacent to mesic areas during dry years continues to negatively impact the long-term health of these plant communities.

Waterfowl Breeding Habitat Conditions

In 2013, the traditional and eastern survey areas in the Canada and the U.S. prairies were characterized by a delayed spring, but habitat conditions were improved or similar to last year in many areas due to average or above-average precipitation, with the exceptions of southeastern Canada, the northeast U.S., and portions of Montana and the Dakotas. The May pond estimate (wetland basins with standing water in Prairie and Parkland Canada and north central U.S.) was 6.9 million or 24% above the 2012 estimate and 35% above the long-term average. The delayed spring was evident across the traditional survey area. The majority of the Canadian prairies had average to below-average winter temperatures and above-average precipitation; however, a poor frost seal resulted in little runoff to recharge wetlands. Extreme southern Saskatchewan and southern Manitoba received abundant spring rainfall but most of the moisture came too late for the majority of waterfowl breeding. Conditions in the Parklands improved from those of 2012 and the western boreal forest received average annual precipitation. Most of the Canadian portion of the traditional survey area was rated as good or excellent this year, in contrast to the dry conditions last year across northern Saskatchewan and Alberta.

Habitat conditions in the surveyed portion of the U.S. prairies were fair to poor and unchanged from conditions in 2012. The May pond estimate was 2.3 million, 41% above the 2012 estimate and 42% above the long-term average. Most of the increase in pond numbers resulted from 10 days of rain in May during the survey, and post-survey reconnaissance revealed numerous wetlands, with many unoccupied by waterfowl.

In 2013, many arctic and boreal areas important to geese were characterized by a cold, late spring followed by higher than average temperatures that, in many cases, resulted in an average initiation of breeding. The effect of the late spring combined with rapid warm-up was uncertain, but average peak hatch dates and clutch sizes were reported from many areas. A major exception was Alaska's Yukon-Kuskokwim Delta, where ice break-up was the latest since 1964. A storm surge destroyed numerous goose nests and killed many goslings. Spring was later than average in Alaska's interior. In contrast breeding phenology was earlier than average in the central Arctic, so above-average production was expected for snow, Ross' and MCP white-fronted geese nesting in the Queen Maude Gulf. Brant and Canada geese nesting in the central Arctic should have benefitted as well. Wetland abundance indices in the Canadian and U.S. prairies improved dramatically in 2013 by comparison to conditions last year, with the exception of the western Dakotas and eastern Montana. Although early spring was cold and wet in many goose nesting areas of the U.S., the outlook for production was expected to be average in 2013. Primary abundance indices decreased for 11 goose populations and increased for 11 other goose populations by comparison to 2012 levels. Primary abundance indices decreased for western and eastern tundra swans compared to 2012 levels. The forecast production of geese and swans in North America was generally favorable in 2013.

Habitat conditions deteriorated across much of Wyoming during the report period. With the lack of residual moisture and cover, hot and dry weather during spring and summer continued to adversely impact migratory game bird production. The extent of the drought impact is unknown, but weather forecasts for the near future are more favorable to the status of migratory game bird populations.

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DUCKS AND MERGANSERS

PERIOD COVERED: September 1, 2012 - August 31, 2013

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

BREEDING GROUND SURVEY

The duck breeding ground survey historically flown by the WGFD was suspended after the 1999 survey.

Forecasts of fall duck flights are based on continental trends in duck breeding populations and water conditions on breeding grounds in traditional survey areas.

The continental population of breeding ducks decreased 8% from 2012 to 2013, but remained 31% above the long-term average (Tables 1 and 3). The breeding population of mallards in the traditional survey area decreased 2% from the 2012 level, but remained 36% above the long-term average (Tables 2 and 3).

Short and long-term changes in breeding populations of 10 major duck species are shown in Table 3. In 2013, the counts of two species increased by comparison to 2012 levels. Breeding populations of American wigeon and canvasback increased from 2012 to 2013.

The 2013 fall flight for the mid-continent population of mallards was forecast at 13.0 million and was similar to the 2012 estimate. The mid-continent mallard population is composed of mallards from the traditional survey area, which was revised in 2008 to exclude Alaska mallards, and also includes mallards from Michigan, Minnesota, and Wisconsin. These indices were based on mid-continent mallard population models revised in 2002, and the 2008 updated model weights, and therefore differ from those previously published.

2012 DUCK HARVEST INFORMATION

In 2012, the Department estimated 50,233 ducks were harvested in Wyoming (Table 4). The 2012 harvest was more than recorded in 2011, but remained 40% below the Department's objective. During the last decade, trends in Wyoming's duck harvest have not correlated well with the increasing continental duck population, likely due to severe drought that has prevailed in Wyoming throughout the same time frame. Harvest estimates derived from the USFWS's Harvest Information Program (HIP) (Table 7) consistently deviate from Department estimates. The Service determined there may be issues with recovery of HIP registrations from some categories of license vendors.

In the Central Flyway portion of Wyoming, 38,529 ducks were harvested in 2012 (Table 5). This harvest was 3% more than recorded in 2011, but remained 29% below the Department's objective for the Central Flyway. Wyoming waterfowl/wetland management areas are depicted in Figure 4.

In the Pacific Flyway portion of Wyoming, 11,704 ducks were harvested in 2012 (Table 6). This was 16% above the 2011 harvest of 9,839 ducks and remains 60% below the Department's objective for Pacific Flyway duck harvest.

The prevalent species harvested in Wyoming by waterfowl hunters is the mallard (Table 7). American wigeon, teal, gadwall, and goldeneyes are also numerically important species in the harvest. Presently, HIP estimates do not distinguish duck species according to Flyway in any of the Rocky Mountain States. Estimating state-specific sales of duck stamps is also becoming increasingly problematic for the USFWS. Flyway-specific estimates of the total duck harvest are provided in Table 8.

MID-WINTER SURVEYS

The number of ducks counted in the Central Flyway portion of the state during early January was 26% below the long-term average (Table 9). The number of ducks counted in the Pacific Flyway portion of the state was 90% below the long-term average.

DUCK BANDING

The Department contributed funding through the flyway dues to help support the Central Flyway's cooperative duck banding operation in 2012. A single crew banded ducks in central North Dakota.

RECOMMENDATIONS

1. Continue to support objectives of the Adaptive Harvest Management program and the North American Waterfowl Management Plan.
2. Work with Department personnel, joint ventures, and other interests to identify and develop wetland habitat projects designed to increase local duck production, hold more birds in the fall, and provide additional harvest opportunity. Increase public access within key waterfowl harvest areas statewide.
3. Support acquisition and development of the Cokeville Meadows National Wildlife Refuge. Provide biological information when requested and make recommendations to the U.S. Fish and Wildlife Service regarding the development and eventual management of refuge lands.
4. Support duck and goose banding efforts in both Flyways.

5. Review and critique federal policies and regulations affecting waterfowl management in Wyoming.
6. Continue to support and participate in the flyway system of waterfowl management.

Table 1. Duck breeding population estimates (in thousands), for regions in the traditional survey area, 2012 and 2013.

SURVEY AREA	2012	2013	PERCENT CHANGE
<u>TRADITIONAL AREAS</u>			
Alaska - Yukon Territory - Old Crow Flats	4,455	3,296	-26%
C. & N. Alberta - N.E. British Columbia - Northwest Territories	8,799	8,323	-5%
N. Saskatchewan - N. Manitoba - W. Ontario	2,754	3,441	25%
S. Alberta	4,845	4,471	-8%
S. Saskatchewan	11,318	12,258	8%
S. Manitoba	1,538	1,575	2%
Montana and western Dakotas	2,467	1,599	-35%
Eastern Dakotas	12,400	10,643	-14%
TOTAL^a	48,576	45,606	-6%

^a Includes the 10 species in Table 3 plus American black duck, ring-necked duck, goldeneyes, bufflehead, and ruddy duck. Excludes eiders, long-tailed duck, wood duck, scoters, and mergansers.

Source: USFWS. Trends in duck breeding populations, 1955-2013.

Table 2. Mallard breeding population estimates (in thousands) for regions in the traditional survey area, 2012 and 2013.

SURVEY AREA	2012	2013	PERCENT CHANGE
<u>TRADITIONAL AREAS</u>			
Alaska - Yukon Territories - Old Crow Flats	506	338	-33%
C. & N. Alberta - N.E. British Columbia - Northwest Territories	1,547	1,020	-34%
N. Saskatchewan - N. Manitoba - W. Ontario	1,039	1,427	37%
S. Alberta	1,261	1,141	-10%
S. Saskatchewan	2,502	2,576	3%
S. Manitoba	401	448	12%
Montana & western Dakotas	793	794	0%
Eastern Dakotas	2,554	2,627	3%
TOTAL	10,603	10,371	-2%

Source: USFWS. Trends in duck breeding populations, 1955-2013.

Table 3. Changes in breeding population estimates (in thousands) for 10 species of ducks in the traditional survey area.

PERCENT CHANGE					
SPECIES	2012	2013	BETWEEN 2012 AND 2013	LTA	BETWEEN 2013 AND THE 1955 - 12 AVERAGE
Mallard	10,602	10,372	-2%	7,626	36%
Gadwall	3,586	3,351	-7%	1,864	80%
American wigeon	2,145	2,644	23%	2,587	2%
Green-winged teal	3,471	3,053	-12%	2,017	51%
Blue-winged teal	9,242	7,732	-16%	4,839	60%
Northern shoveler	5,018	4,751	-5%	2,429	96%
Northern pintail	3,473	3,335	-4%	4,029	-17%
Redhead	1,270	1,202	-5%	682	76%
Canvasback	760	787	4%	576	37%
Scaup (Greater and lesser combined)	5,239	4,166	-20%	5,048	-17%
TOTAL	44,806	41,393	-8%	31,697	31%

Source: USFWS. Trends in duck breeding populations, 1955-2013.

Table 4. Wyoming duck harvest and hunter activity by flyway, 2010-2012.

	MEAN				
	2006-10	2010	2011	2012	OBJECTIVE
CENTRAL FLYWAY					
No. Hunters	4,802	4,347	4,712	4,512	9,216
No. Rec. Days	26,129	23,945	25,115	24,623	45,235
Harvest	40,403	35,641	37,548	38,529	54,394
PACIFIC FLYWAY					
No. Hunters	1,642	1,236	1,357	1,552	3,970
No. Rec. Days	7,564	6,180	6,040	6,508	19,148
Harvest	14,207	8,810	9,839	11,704	29,294
TOTALS					
No. Hunters	6,444	5,583	6,069	6,064	13,186
No. Rec. Days	33,693	30,125	31,155	31,131	64,383
Harvest	54,610	44,451	47,387	50,233	83,688

Source: WGFD. Annual Report of Upland Game and Furbearer Harvest, 2007-2013.

Table 5. Duck harvest and hunter activity within waterfowl management areas in the Central Flyway portion of Wyoming.

MANAGEMENT AREA			MEAN				
			2006-10	2010	2011	2012	OBJECTIVE
Missouri/Cheyenne/ Little Powder Rivers	1A	No. Hunters	322	298	282	179	398
		No. Rec. Days	1,357	1,345	1,050	542	1,791
		Harvest	2,318	2,558	1,864	1,134	1,393
Tongue/Little Big Horn/Powder Rivers	1B	No. Hunters	303	229	315	260	547
		No. Rec. Days	1,489	966	1,556	944	2,461
		Harvest	2,195	1,800	2,505	1,603	3,063
Central North Platte River	1C	No. Hunters	819	798	873	990	1,603
		No. Rec. Days	5,307	4,669	4,774	5,997	8,015
		Harvest	7,728	6,061	7,839	8,957	7,214
Lower North Platte River	2A	No. Hunters	1,014	934	1,088	1,048	2,050
		No. Rec. Days	5,849	5,756	5,356	5,338	9,225
		Harvest	8,123	6,833	5,951	7,330	9,225
South Platte River	2B	No. Hunters	117	115	101	101	193
		No. Rec. Days	447	607	712	448	965
		Harvest	939	1,251	821	815	869
Upper North Platte River	3A	No. Hunters	397	415	296	338	1,075
		No. Rec. Days	1,564	1,751	1,221	1,880	4,838
		Harvest	2,608	2,527	2,079	1,875	5,160
Big Horn River	4A	No. Hunters	1,283	1,045	1,145	1,104	2,200
		No. Rec. Days	7,392	6,401	6,720	6,971	12,000
		Harvest	12,355	10,236	9,785	13,819	20,000
Yellowstone River	4B	No. Hunters	36	10	8	5	100
		No. Rec. Days	142	18	8	28	400
		Harvest	233	97	8	32	500
Wind River	4C	No. Hunters	490	477	545	456	950
		No. Rec. Days	2,537	2,373	3,371	2,290	5,000
		Harvest	3,820	4,217	6,444	2,658	6,200
Sweetwater River	4D	No. Hunters	21	26	59	31	100
		No. Rec. Days	45	59	347	185	540
		Harvest	84	61	252	306	770
TOTALS		No. Hunters	4,802	4,347	4,712	4,512	9,216
		No. Rec. Days	26,129	23,945	25,115	24,623	45,235
		Harvest	40,403	35,641	37,548	38,529	54,394

WATERFOWL MANAGEMENT AREAS IN WYOMING

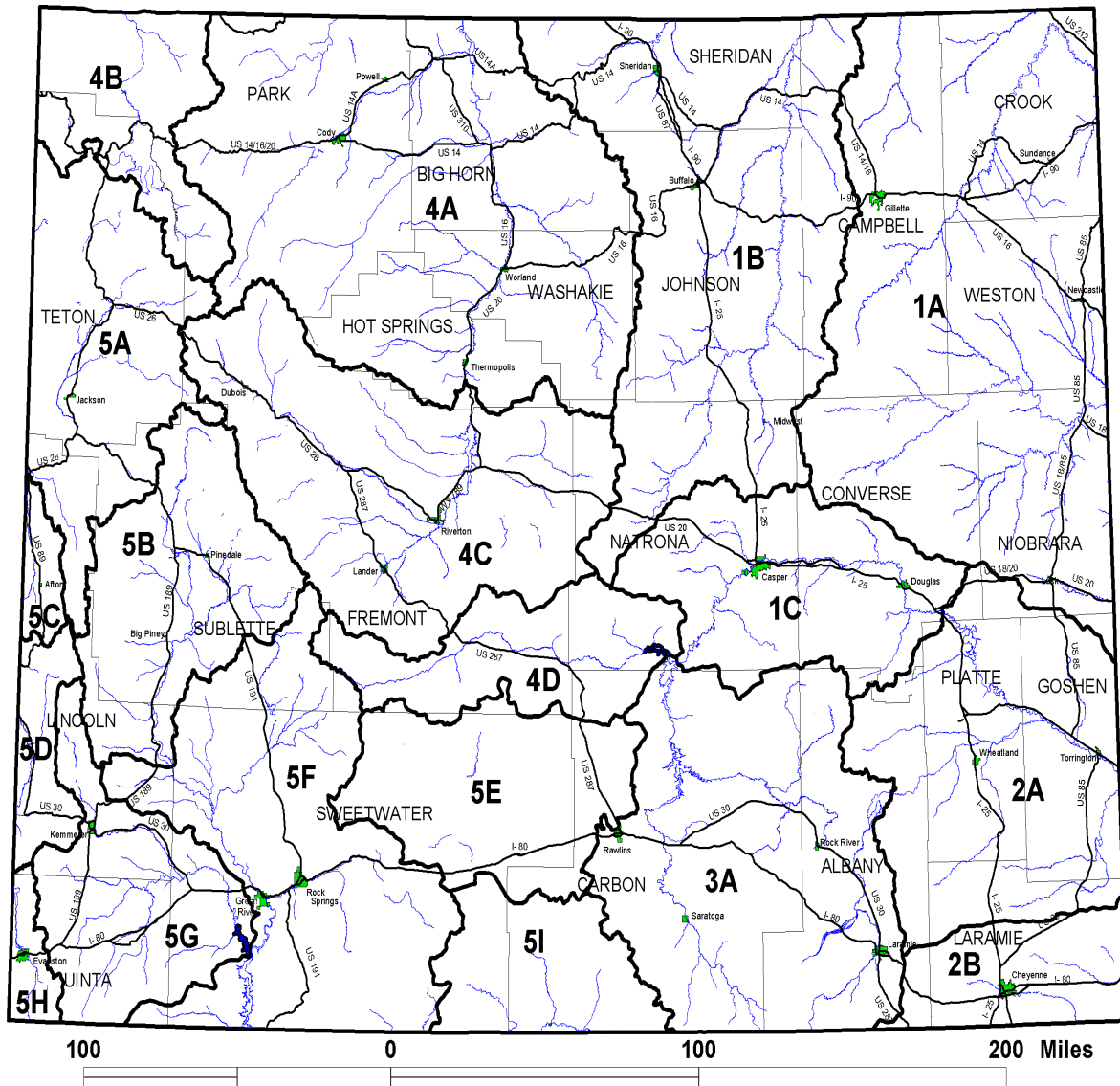


Fig. 4. Waterfowl/wetland management areas in Wyoming.

Table 6. Duck harvest and hunter activity within waterfowl management areas in the Pacific Flyway portion of Wyoming.

MANAGEMENT AREA			MEAN				
			2006-10	2010	2011	2012	OBJECTIVE
Snake River	5A	No. Hunters	183	125	86	161	440
		No. Rec. Days	965	870	478	1,004	2,200
		Harvest	1,348	1,140	834	1,289	2,800
Upper Green River Basin	5B	No. Hunters	231	104	147	184	500
		No. Rec. Days	880	294	439	396	2,000
		Harvest	1,631	503	550	638	3,000
Salt River	5C	No. Hunters	213	120	146	119	750
		No. Rec. Days	1,290	811	929	746	4,000
		Harvest	2,763	1,024	1,419	1,711	7,500
Lower Bear River	5D	No. Hunters	111	111	116	98	450
		No. Rec. Days	539	648	533	536	2,048
		Harvest	1,101	1,140	1,031	927	3,294
Great Divide Basin	5E	No. Hunters	27	20	13	15	100
		No. Rec. Days	61	54	41	34	400
		Harvest	99	100	25	88	600
Lower Green River Basin	5F	No. Hunters	432	368	365	563	700
		No. Rec. Days	2,126	1,998	1,826	2,458	3,000
		Harvest	3,840	2,641	2,771	3,934	4,200
Ham's/Black's Fork	5G	No. Hunters	250	194	276	237	600
		No. Rec. Days	867	747	1,042	758	3,000
		Harvest	1,963	1,169	1,656	1,358	3,600
Upper Bear River	5H	No. Hunters	158	146	184	162	330
		No. Rec. Days	749	620	697	554	1,900
		Harvest	1,316	941	1,451	1,685	3,500
Little Snake River	5I	No. Hunters	37	48	24	13	100
		No. Rec. Days	87	138	55	22	600
		Harvest	146	152	102	74	800
TOTALS		No. Hunters	1,642	1,236	1,357	1,552	3,970
		No. Rec. Days	7,564	6,180	6,040	6,508	19,148
		Harvest	14,207	8,810	9,839	11,704	29,294

Table 7. HIP estimates of duck harvest and hunter activity in Wyoming^a during the 2010-2012 hunting seasons.

		%		%		%
DUCK SPECIES COMPOSITION	2010	OF BAG	2011	OF BAG	2012	OF BAG
Mallard	22,075	60.46	22,562	54.13	25,457	61.08
Domestic mallard	0	0.00	61	0.15	0	0.00
Gadwall	2,985	8.17	2,729	6.55	1,360	3.26
Wigeon	2,707	7.41	2,608	6.26	2,429	5.83
Green-winged teal	3,124	8.56	2,365	5.67	3,206	7.69
Blue-winged Teal/Cinnamon teal	1,805	4.94	1,031	2.47	777	1.86
Northern shoveler	625	1.71	607	1.46	777	1.86
Northern pintail	417	1.14	607	1.46	583	1.40
Wood duck	347	0.95	182	0.44	389	0.93
Redhead	208	0.57	182	0.44	874	2.10
Canvasback	0	0.00	243	0.58	0	0.00
Great scaup	0	0.00	0	0.00	0	0.00
Lesser scaup	0	0.00	61	0.15	97	0.23
Ring-necked duck	208	0.57	364	0.87	583	1.40
Goldeneyes	625	1.71	2,365	5.67	4,955	11.89
Bufflehead	694	1.90	243	0.58	97	0.23
Ruddy duck	69	0.19	61	0.15	97	0.23
Long-tailed duck	0	0.00	61	0.15	0	0.00
Scoters	0	0.00	0	0.00	0	0.00
Hooded merganser	0	0.00	61	0.15	0	0.00
Other mergansers	139	0.38	121	0.29	0	0.00
Other ducks	0	0.00	0	0.00	0	0.00
TOTAL	36,028	98.67	36,514	87.60	41,681	100.00
TOTAL DUCK HARVEST	36,000+/-32%		36,500+/-31%		41,700+/-22%	
TOTAL ACTIVE DUCK HUNTERS	3,300+/-18%		4,000+/-19%		3,400+/-17%	
TOTAL DUCK HUNTER DAYS AFIELD	18,700+/-26%		19,600+/-26%		20,800+/-21%	
SEASONAL DUCK HARVEST PER HUNTER	10.8+/-37%		9.1+/-36%		12.2+/-27%	
Sample Sizes						
Duck Wings	519		602		429	

^a Central and Pacific Flyway estimates are combined and will continue to be for the near future.

Source: USFWS. HIP preliminary harvest estimates.

Table 8. Flyway-specific estimates of duck harvest in Wyoming during the 2003-12 hunting seasons.

Duck Harvest Year	Central Flyway	Pacific Flyway	Total
2003	35,700	3,900	39,600
2004	39,700	3,100	42,800
2005	25,900	10,000	35,900
2006	31,200	14,100	45,300
2007	37,000	12,900	49,900
2008	26,900	6,500	33,400
2009	32,700	11,800	44,500
2010	25,200	10,800	36,000
2011	21,800	4,500	26,300
2012	46,300	33,400	79,700

Source: USFWS. HIP preliminary harvest estimates.

Table 9. Changes in ducks and mergansers counted during the mid-winter survey in Wyoming, 2013 to the long-term average.

SPECIES	CENTRAL FLYWAY			PACIFIC FLYWAY		
	2013	LTA	Between 2013 and The 1992 - 12 Average	2013	LTA	Between 2013 and The 2002 - 12 Average
Mallard	40,641	58,557	-31%	224	2,069	-89%
Gadwall	606	1,008	-40%	0	10	-100%
American wigeon	1,241	1,084	14%	0	0	0%
Green-winged teal	683	473	44%	2	37	-95%
Blue-winged teal/ Cinnamon teal	0	0	0%	0	0	0%
Northern shoveler	0	18	-100%	0	0	0%
Northern pintail	75	181	-59%	0	0	0%
Wood duck	0	22	-100%	0	0	0%
Redhead	7	12	-42%	0	96	-100%
Canvasback	0	0	0%	0	0	0%
Scaup	20	26	-23%	0	0	0%
Ringneck	232	94	147%	0	0	0%
Goldeneye	8,703	8,366	4%	172	1,937	-91%
Bufflehead	79	134	-41%	0	3	-100%
Ruddy duck	80	4	1900%	0	0	0%
Mergansers	1,320	2,849	-54%	82	509	-84%
Unidentified	0	32	-100%	0	90	-100%
TOTAL	53,687	72,860	-26%	480	4,751	-90%

Source: WGFD and USFWS 1992 - 2013 MWS reports and Flyway Data Books.

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HI-LINE POPULATION OF CANADA GEESE

PERIOD COVERED: September 1, 2012 - August 31, 2013

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

BREEDING POPULATION

Prior to 2000, the Department's management objective was based on indicated breeding pairs of Canada geese. In 2000, the Department began reporting the total number of Canada geese counted in the April/May breeding ground survey. This is the common measure used by other jurisdictions in the Central Flyway.

Prior to 2010, the Mid-winter Waterfowl Survey (MWS) was the population index for this population. In 2010, the Central Flyway, Hi-Line Population of Canada Geese Subcommittee replaced the MWS with the Spring Population Survey as the primary population index for this population.

The number of Canada geese from the Hi-Line population that breed in Wyoming has exceeded the Department's objective for several years (Table 1). No visibility correction factor (VCF) was used to calculate these indices. Consequently, they differ from those previously calculated with a VCF of 2. The Waterfowl Section is inadequately staffed to survey all management areas annually. The 2013 population count of 13,452 geese was the highest count since at least 1993 and was 25% higher than the 2012 count. The increase in the number of Canada geese counted this year was attributed to a cold and wet spring holding the birds in Wyoming versus the birds migrating further north before the survey.

TRAPPING AND BANDING STUDIES

No HLP Canada geese were trapped and banded during 2013. The most recent banding effort was in 2004. The most recent recovery occurred in January 2011. Refer to previous JCRs for additional information.

HARVEST

The number of hunters, recreation days and harvest were below the Department's objectives for the Hi-Line and Short Grass Prairie populations in 2012 (Table 2). The only year all three parameters exceeded objectives was in 2005. Harvest increased 10% from 2011 to 2012. The statewide goose harvest estimated by the USFWS is 8% lower than the Wyoming state estimate (Tables 2 and 3 of this chapter and Tables 3, 4, and 5 of the RMP of CAGE chapter). The Canada goose season opened September 22 in zone C2 of the Central Flyway. The season

opened October 6 throughout zone C1 of the Central Flyway; Goshen and Platte Counties were open October 6 through 21 and November 21 through February 17. All goose species collectively are included in the estimates of goose harvest and hunter activity.

During 2012-13, shooting hours for dark geese were ½ hour before sunrise to sunset except within the following areas: Goshen County north of Wyoming Highway 313 and Count Road 28; and those portions of Platte County west of Interstate Highway 25 or south of Wyoming Highway 160 (Gray Rocks Road) and Riverview Road (Platte County Road 271) where the shooting hours for dark geese were ½ hour before sunrise until 1:00 p.m., except all-day hunting was allowed October 6-21, all Saturdays and Wednesdays from November 21 through December 31, and all Saturdays, Sundays, and Wednesdays from January 1 through the close of the dark goose season.

MID-WINTER SURVEY

State and Federal agencies conduct a mid-winter waterfowl survey throughout the United States during the first full week in January. The purpose of the survey is to estimate the continental population and distribution of wintering waterfowl. Midwinter counts of the Hi-Line and Short Grass Prairie populations of Canada geese are summarized in Table 5. Milder than-normal winter weather decreased the migration of geese from northern breeding and staging grounds. In eastern Wyoming most of the traditional roost sites held inadequate water due to an extreme drought in 2012.

RECOMMENDATIONS

1. Continue the staggered sunset and 1 P.M. hunting closures for geese in Goshen County to balance conflicting public perceptions about whether shooting hours affect local goose abundance and susceptibility to harvest.
2. Continue the breeding population survey, mid-winter survey and banding program (as manpower and resources allows).
3. Determine the effect all-day shooting has on resident and migrating geese in Goshen County.
4. Determine what actions can be taken to maximize harvest of Canada geese from the Hi-Line Population. Continue hunting dark geese in all Central Flyway counties for the maximum season length of 107 days.

Table 1. Canada goose breeding populations in the Hi-Line range of Wyoming.

MANAGEMENT AREA	MEAN 2007-2011	2011	2012	2013	CHANGE BETWEEN 12 AND 13	OBJECTIVE
Missouri and Little Powder Rivers	2,456	2,131	3,716	3,716	NA	1,820
Tongue/Powder Rivers	3,404	2,899	3,332	3,332	NA	718
Central North Platte River	1,275	1,136	1,136	1,866	64%	666
Lower North Platte River	1,068	1,092	1,092	3,047	179%	1,128
South Platte River	115	81	209	209	NA	26
Upper North Platte River (Laramie Plains)*	930	785	1,282	1,282	NA	513
TOTAL	9,248	8,124	10,767	13,452	25%	4,871

* Represents probable Hi-Line production area in Albany county and the Medicine Bow Drainage.

Not all management areas are surveyed annually. To generate population estimates areas not surveyed during a year were assigned the most recent year's data. No visibility correction factor was used.

Source: WGFD. Unpublished data.

Table 2. Hi-line and SGP Canada goose harvest in Wyoming.

<u>MANAGEMENT AREA</u>						CHANGE BETWEEN 11 and 12	OBJECTIVE
	MEAN 2006-10	2010	2011	2012			
<u>MISSOURI/LITTLE POWDER RIVER</u>							
No. Hunters	220	85	179	167	-7%		299
No. Rec. Days	808	418	588	671	14%		1,495
Harvest	1,432	2,293	636	980	54%		598
<u>TONGUE/POWDER RIVER</u>							
No. Hunters	187	187	179	181	1%		286
No. Rec. Days	739	895	983	474	-52%		1,430
Harvest	718	1,211	202	443	119%		715
<u>CENTRAL NORTH PLATTE RIVER</u>							
No. Hunters	614	616	589	554	-6%		1,106
No. Rec. Days	3,720	3,120	3,678	3,416	-7%		5,530
Harvest	2,220	2,134	2,438	2,165	-11%		1,465
<u>LOWER NORTH PLATTE RIVER</u>							
No. Hunters	1,995	2,518	1,861	1,805	-3%		2,772
No. Rec. Days	11,278	14,417	10,827	11,450	6%		15,246
Harvest	13,264	20,705	10,718	11,762	10%		12,044
<u>SOUTH PLATTE RIVER</u>							
No. Hunters	71	92	77	142	84%		68
No. Rec. Days	355	619	295	417	41%		272
Harvest	240	461	261	597	129%		170
<u>UPPER NORTH PLATTE RIVER*</u>							
No. Hunters	55	56	34	53	56%		165
No. Rec. Days	208	316	295	222	-25%		742
Harvest	160	309	336	107	-68%		330
TOTAL							
No. Hunters	3,142	3,554	2,919	2,902	-1%		4,696
No. Rec. Days	17,108	19,785	16,666	16,650	0%		24,715
Harvest	18,034	27,113	14,591	16,054	10%		15,322

* Calculated as 33% of the Upper North Platte Management Area.

Source: WGFD. Annual Report of Upland Game and Furbearer Harvest, 2007-2013.

Table 3. HIP estimates of goose harvest and hunter activity in Wyoming^a during the 2010-2012 regular hunting seasons.

		%		%		%
GOOSE SPECIES COMPOSITION	2010	OF BAG	2011	OF BAG	2012	OF BAG
Canada Goose	24,378	99.63	15,482	97.91	29,022	98.88
Snow Goose	0	0.00	248	1.57	330	1.12
Blue Goose	0	0.00	0	0.00	0	0.00
Ross's Goose	90	0.37	83	0.52	0	0.00
White-fronted Goose	0	0.00	0	0.00	0	0.00
Brant	0	0.00	0	0.00	0	0.00
Other Goose	0	0.00	0	0.00	0	0.00
TOTAL	24,468	100.00	15,813	100.00	29,352	100.00
TOTAL GOOSE HARVEST	24,500+/-24%		15,800+/-27%		29,400+/-35%	
TOTAL ACTIVE GOOSE HUNTERS	3,800+/-15%		3,700+/-18%		3,800+/-16%	
TOTAL GOOSE HUNTER DAYS AFIELD	20,000+/-22%		17,900+/-23%		19,200+/-20%	
SEASONAL GOOSE HARVEST PER HUNTER	6.4+/-28%		4.3+/-33%		7.8+/-39%	
ACTIVE WATERFOWL HUNTERS ^b	5,700+/-12%		5,600+/-14%		5,700+/-12%	
Sample Sizes						
Goose Tails	273		191		356	

^a Central and Pacific Flyway estimates are combined and will continue to be for the near future.

^b Duck and goose hunters combined.

Source: USFWS. HIP preliminary harvest estimates.

Table 4. Flyway-specific estimates of goose harvest in Wyoming during the 2003-12 hunting seasons.

Goose Harvest Year	Central Flyway	Pacific Flyway	Total
2003	23,400	1,200	24,600
2004	20,600	2,200	22,800
2005	18,900	1,200	20,100
2006	21,200	1,700	22,900
2007	11,900	1,100	13,000
2008	22,500	5,000	27,500
2009	17,100	4,100	21,200
2010	20,500	3,900	24,400
2011	14,900	900	15,800
2012	28,500	800	29,300

Source: USFWS. HIP preliminary harvest estimates.

Table 5. Mid-winter surveys of Hi-line/SGP Canada geese in Wyoming, 2009 - 2013.

<u>Population</u>						
Hi-line	2009	2010	2011	2012	2013	Average
<u>LOWER NORTH PLATTE RIVER</u>						
Goshen and Platte Co.	32,377	33,926	57,919	29,900	35,313	37,887
<u>CENTRAL NORTH PLATTE RIVER</u>						
Carbon, Converse and Natrona Co.	9,777	8,552	11,456	8,862	12,486	10,227
TOTAL	42,154	42,478	69,375	38,762	47,799	48,114
SGP	2009	2010	2011	2012	2012	Average
<u>LOWER NORTH PLATTE RIVER</u>						
Goshen and Platte Co.	3,203	1,414	4,765	2,884	3,281	3,109
<u>CENTRAL NORTH PLATTE RIVER</u>						
Carbon, Converse and Natrona Co.	967	162	943	854	1,159	817
TOTAL	4,170	1,576	5,708	3,738	4,440	3,926
Hi-line and SGP combined	2009	2010	2011	2012	2012	Average
<u>LOWER NORTH PLATTE RIVER</u>						
Goshen and Platte Co.	35,580	35,340	62,684	32,784	38,594	40,996
<u>CENTRAL NORTH PLATTE RIVER</u>						
Carbon, Converse and Natrona Co.	10,744	8,714	12,399	9,716	13,645	11,044
TOTAL	46,324	44,054	75,083	42,500	52,239	52,040

Source: WGFD. Unpublished data.

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ROCKY MOUNTAIN POPULATION OF CANADA GEESE

PERIOD COVERED: September 1, 2012 - August 31, 2013

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

BREEDING POPULATION

Prior to 2000, the Department based its management objective for Canada geese on the number of indicated breeding pairs of geese. In 2000, the Department began reporting the total number of Canada geese counted in April/May. This is the common measure used by other jurisdictions in the Central Flyway. The breeding population (BPOP) count methodology was revised in 2008 by dropping the visibility correction factor (2 X observed value).

Breeding ground surveys of the Rocky Mountain Population (RMP) of Canada geese are summarized in Table 1. The 2013 survey was conducted in the entire Central and Western Reference Areas. The 2010 survey was also conducted in both the Central and Western Reference areas. In the Western Reference Area all management areas were flown except Yellowstone Park. In 2013 the number of breeding geese increased in the Central and Western Reference Areas, resulting in an increase in the 2013 total population count (10,070 geese); which is 18% above the 2010 survey total, 13% above the 2007-2011 average of 8,760 geese, and 10% above the population objective of 9,048 breeding geese (Table 1).

In recent years Yellowstone National Park (YNP) has not been surveyed although a large number of geese breed and summer in that area. If YNP were included in this report, breeding goose population estimates would be much higher.

It is unclear if opening the early Canada goose season to general or unlimited hunting in the Western Reference Area has caused the BPOP decline observed between most recent surveys in 2009 and 2010. Shifting to a 3 year cycle for BPOP surveys in the Western Reference Area introduces considerable uncertainty into attempts to determine short term population trends. The lack of banding data makes it impossible to tell what the harvest rates are for locally produced birds taken in Wyoming in the early and regular goose seasons versus the harvest in adjacent states and if these harvest rates might be excessive. Geese taken during the early season are generally locally produced geese but birds taken later in the regular season may include birds that originate in Yellowstone National Park or southwest Montana or eastern Idaho. No geese are banded in those areas. However, there does not appear to be a significant migration of geese into the western reference area from adjacent states.

The Pacific Flyway Study Committee is currently revising the RMP Canada Goose Management Plan. It is possible the Pacific and Rocky Mountain populations may be combined into a single meta-population in the new management plan. Since surveys indicate breeding populations have deviated significantly from objectives for many years in several management areas in both reference areas, it may be prudent to revise the population objectives for Wyoming in the next

year. When the plan revision is completed, the key changes to the plan will be reported in this annual report.

MOLT SURVEY

Molting goose surveys were historically flown on an irregular basis. The most recent survey was flown in 2010. The survey was suspended indefinitely in 2013. Refer to previous JCRs for previous survey results.

TRAPPING AND BANDING STUDIES

No banding occurred in Wyoming during 2009-2013. A summary of banding is reported in the 2005-2010 migratory game bird annual reports. A few banded birds are reported each year for banding efforts in Wyoming from 2005 to 2008 (USGS 2011).

HARVEST

Early Season

Regulations governing Wyoming's early Canada goose season regulations are summarized in Table 2. An early Canada goose season is not offered in the central reference area. In 2004 the early goose season in the Pacific Flyway became a general hunt with no special limited quota licenses required. The September hunting season is designed to address damage problems by moving birds off private irrigated hay meadows and cropland while providing some additional hunting opportunity. The transition to a general hunt was encouraged by the USFWS to reduce complex regulations and was supported by the Department's regional personnel to deal with growing damage complaints.

The early September hunt accounted for a small portion of the overall goose harvest in the western reference area when the hunt was a permit based hunt. In 2003 the early harvest was about 15% of the regular season harvest. Some shifts in goose distribution were noted following the early hunts, suggesting the early season may be successfully addressing damage problems. However, some hunters are concerned the early hunts compromise hunting opportunity at the start of the regular season. From 1997-2003 goose harvest in the early season averaged 310 birds.

Since the early season framework changed to a general 8 day season in 2004, the goose harvest has increased. In order to track the harvest in the early season, the annual harvest survey was modified in 2005 to survey hunters who participated in the early goose hunt. Based on that survey the estimated harvest was 628 geese in 2005, 1, 326 geese in 2006 and 1, 426 geese in 2007. However, since 2008 the goose harvest in the early season has declined. Only 882 geese were reported in the harvest 2012 survey. In 2012, an average of 2.06 geese per hunter was reported in the harvest survey (Table 3).

There is a corresponding increase in the number of hunters from 2005 to 2007 but numbers declined in recent years. In 2006, the early season harvest comprised 37% (1,326/3,606) of the total goose harvest in the western reference area. In 2007, the proportion was 40% (1426/3594); in 2008, 40% (1,101/2,747); in 2009, 36% (818/2276); in 2010, 40% (886/2,228); and in 2011, 50% (804/1621) of the total goose harvest in the western reference area. In 2012, the early season harvest comprised 35% (882/2535) of the total goose harvest in the Western Reference Area. The early season hunt takes a large proportion of the annual harvest in only 8 days. Geese are particularly vulnerable to hunting in early September, with family groups decoying fairly readily compared to later in the season when geese are in larger flocks and become decoy shy. Shifts in goose distribution and changes in harvest rates in both the early and late goose hunts should continue to be monitored in the Western Reference Area (Tables 3 and 4).

Regular Season

Harvests during the regular waterfowl season in the western and central reference areas are summarized in Tables 4 and 5, respectively. RMP Canada geese comprise most of the harvest in the management areas that constitute the Central Reference Area and almost all the geese in the western reference area. In the Western Reference Area, numbers of hunters, recreation days, and harvest increased from 2011 to 2012.

It is unclear how the early season harvest is affecting regular season opportunities in the Western Reference Area. Hunter and harvest declines were noted in both the early and regular seasons in 2008 – 2012, possibly reflecting poor reproduction and/or declining access in some areas. However, only a few complaints were registered by early season or regular season hunters. Lockman et al (1987) found that hunting pressure during the early goose and crane hunt in the initial years of the limited quota hunt displaced geese out of Star Valley and Bear River/Cokeville Meadows. Presumably these geese moved into adjacent areas in Wyoming, Utah or Idaho where there was no early goose season. This displacement addressed goose depredation issues in the two management areas (Lockman et al 1987).

The estimated harvest of 13,401 geese in the Central Reference Area in 2012 increased by 59% compared to 2011. The harvest in the Bighorn Basin contributes over 50% of the annual harvest in the Central Reference Area. The number of hunter days and harvest in the Central Reference Area increased significantly in 2012 (Table 5).

The harvest objective for RMP geese in Wyoming is 7,967 geese including 3,520 geese in the Central Reference Area and 4,447 in the Western Reference Area. The actual harvest in the Central Reference Area has exceeded the objective for the period of record in this report but the harvest in the Western Reference Area has fallen well below the objective over the same time period. It would appear the population harvest objective may be fairly reasonable but the objectives for both reference areas ought to be reviewed in the coming year to determine if changes should be made based on estimated harvest levels achieved in recent years.

Annual changes in harvest estimates and population counts may derive from several factors including: actual changes in the population, shifts in distribution of locally produced birds as a result of drought or early season hunts, changes in migration patterns and annual movements of geese from Montana and Alberta which provide much of the harvest of geese in the Central

Reference Area late in the hunting season, or poor counts due to a number of variables. It is uncertain if the early September season may be displacing geese from portions of the Western Reference Area prior to the regular hunting season, but this is clearly possible. Lockman (1987) reported geese from Star Valley were displaced out of the valley after the early goose and crane hunt was initiated to address crop depredation problems. At that time there were substantially more geese counted in the valley during breeding population surveys.

MID-WINTER SURVEY OF RMP CANADA GEESE

In January 2013, 23,617 geese were counted in the mid-winter survey in the Central Reference Area compared to 9,111 geese in 2012. The 2013 goose count was the highest count during the 5 year period of record (Table 6).

No doubt winter weather patterns affect the number of geese counted in the Central Reference Area of Wyoming. More birds remain in Montana during mild weather and may remain there all winter or until severe winter weather pushes birds south. If the winter is fairly open in Wyoming, large numbers of geese stage in the Bighorn Basin and Wind River Management areas and are reflected in the mid-winter waterfowl survey.

A total of 200 geese were counted in the Western Reference Area in February, 2013. Beginning in 2008, the mid-winter survey was flown in early February to coincide with the winter trumpeter swan survey. This change was made to reduce cost and exposure to risk by combining surveys since comparatively few waterfowl typically found there winter in the Western Reference Area and no significant movements between adjacent states is likely at this time in the winter (Table 6).

Over the past 5 years, counts have fluctuated in response to winter weather patterns. In most years, suitable winter habitat is limited throughout most of the Western Reference Area. Goose numbers fluctuate widely in the Central Reference Area, depending on the amount of open water and winter severity in Montana and central Wyoming. Overall, the RMP is well above objective and most producing states have liberal hunting seasons including early hunts to deal with local depredation issues (Subcommittee on Rocky Mountain Canada Geese 2000).

RECOMMENDATIONS

1. Continue breeding ground and harvest surveys.
2. Continue the general, early Canada goose hunt in the Pacific Flyway portion of Wyoming to address local damage problems. In 2013, the season ran September 1-8 with a daily bag limit of 2 and a possession of 4, except in Teton County the daily bag/possession limits were 3/6. This early hunt should be closely monitored. The decline in goose production in some portions of the Western Reference Area has been a concern. The liberalized early season framework may result in excessive harvest of local geese or could substantially change the fall distribution pattern, adversely affecting the harvest opportunities during the regular season. The drop in the breeding population in the Western Reference Area in 2009 and 2010 and the

low harvest in the Western Reference Area in recent years may suggest a need to continue monitoring population and harvest trends in the future.

3. Collaborate with the U.S. Fish and Wildlife Service regarding acquisition, planning, and development of the Cokeville Meadows National Wildlife Refuge.
4. Continue the trapping and banding program in the Western Reference Area, as resources and time allow, to determine harvest rates and seasonal movements of geese produced in Wyoming. Conduct a detailed band recovery and distribution analysis as more geese are banded in the Wyoming segment of this population.
5. Represent Wyoming's interests in the update and revision of the RMP Goose Management Plan with other members of the Pacific Flyway Study Committee in 2012-2013.
6. Review the population and harvest objectives for the RMP of Canada geese in Wyoming in conjunction with the management plan revision being conducted by the Pacific Flyway Study Committee.

Table 1. Breeding population counts within the Rocky Mountain Population of Canada geese.

WESTERN REFERENCE AREA	MEAN 2007-11	2011	2012	2013	CHANGE BETWEEN 12 AND 13	OBJECTIVE
Yellowstone Park	N/A	N/A	N/A	N/A	N/A	N/A
Snake River	643	594	594	632	6%	589
Upper Green River	377	318	318	504	58%	718
Salt River	367	423	423	340	-20%	615
Lower Bear	611	555	555	1,285	132%	2,230
Great Divide Basin	24	24	24	2	-92%	26
Lower Green River	686	502	502	608	21%	461
Ham's/Black's River	1,002	868	868	1,078	24%	795
Upper Bear River	252	246	246	656	167%	308
Little Snake River	332	302	302	445	47%	256
TOTAL	4,294	3,832	3,832	5,550	45%	5,998
CENTRAL REFERENCE AREA						
Upper North Platte River	604	540	725	725	0%	384
Big Horn River	1,473	1,360	1,673	1,758	5%	1,051
Wind River	1,739	1,525	1,525	1,470	-4%	1,333
Sweetwater River	650	463	463	567	22%	282
TOTAL	4,466	3,888	4,386	4,520	3%	3,050
OVERALL TOTAL	8,760	7,720	8,218	10,070	23%	9,048

Not all management areas are surveyed annually. To generate population estimates during all years, areas not surveyed during a year were assigned the most recent year's data. No visibility correction factor was used.
Source: WGFD. Unpublished data

Table 2. Season dates and bag/possession limits during the early Canada goose hunting seasons in the Pacific Flyway portion of Wyoming, 2004 - 2012.

HUNT AREA	YEAR								
	2004	2005	2006	2007	2008	2009	2010	2011	2012
All counties:									
Season Dates (Sept.)	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8	
Bag/Possession Limit	2/4	2/4	2/4	2/4	2/4	2/4	2/4	2/4	
All counties except									
Teton County:									
Season Dates (Sept.)									1-8
Bag/Possession Limit									2/4
Teton County:									
Season Dates (Sept.)									1-8
Bag/Possession Limit									3/6

Source: WGFD. Early migratory game bird regulations (2005-2013).

Table 3. Harvest data for the early season in the Western Reference Area of the RMP, 2005-2012.

MANAGEMENT AREA	YEAR							
	2005	2006	2007	2008	2009	2010	2011	2012
<u>5A Snake River</u>								
No. Hunters	52	79	125	77	63	77	67	60
Hunter Days	131	208	204	173	153	161	125	191
Harvest	84	217	219	205	172	193	144	153
<u>5B Upper Green River</u>								
No. Hunters	31	16	49	49	35	0	29	28
Hunter Days	56	37	71	74	52	0	66	37
Harvest	57	31	78	27	28	0	9	27
<u>5C Salt River</u>								
No. Hunters	23	111	136	61	90	71	67	32
Hunter Days	67	296	280	111	248	185	126	81
Harvest	82	302	301	180	171	161	164	92
<u>5D Lower Bear River</u>								
No. Hunters	8	19	48	53	24	55	67	55
Hunter Days	23	40	124	130	54	129	108	134
Harvest	10	23	181	110	40	105	92	145
<u>5E Great Divide Basin</u>								
No. Hunters	2	12	0	3	11	0	0	7
Hunter Days	2	14	0	3	11	0	0	14
Harvest	5	40	0	6	11	0	0	0
<u>5F Lower Green River</u>								
No. Hunters	106	207	121	236	141	178	160	152
Hunter Days	230	393	257	528	332	345	318	324
Harvest	270	401	217	427	267	208	241	344
<u>5G Ham's Fork-Black Fork</u>								
No. Hunters	58	76	148	79	72	35	79	68
Hunter Days	92	231	291	160	134	91	138	174
Harvest	90	276	306	117	114	54	142	102
<u>5H Upper Bear River</u>								
No. Hunters	18	27	102	23	2	24	9	27
Hunter Days	35	66	137	36	8	57	42	75
Harvest	30	36	114	29	15	12	12	19
<u>5I Little Snake River</u>								
No. Hunters	0	0	10	7	12	46	0	0
Hunter Days	0	0	10	7	24	91	0	0
Harvest	0	0	10	0	0	153	0	0
<u>TOTAL</u>								
No. Hunters	298	547	739	588	450	486	478	429
Hunter Days	636	1285	1374	1222	1016	1059	923	1030
Days/Hunter	2.1	2.3	1.9	2.1	2.3	2.2	1.9	2.4
Harvest	628	1326	1426	1101	818	886	804	882
Birds/Hunter	2.11	2.42	1.93	1.87	1.82	1.82	1.68	2.06

Source: WGFD. Annual Report of Upland Game and Furbearer Harvest, 2006-2013.

Table 4. Canada goose harvest data for the regular season for the Western Reference Area of the RMP ^a.

<u>MANAGEMENT AREA</u>	MEAN 2006-2010	2010	2011	2012	CHANGE BETWEEN 11 and 12	OBJECTIVE
<u>SNAKE RIVER</u>						
No. Hunters	107	75	30	93	210%	500
No. Rec. Days	434	360	262	336	28%	2,800
Harvest	143	62	48	212	342%	500
<u>UPPER GREEN RIVER</u>						
No. Hunters	109	47	56	78	39%	350
No. Rec. Days	396	119	125	195	56%	1,750
Harvest	157	37	45	136	202%	438
<u>SALT RIVER</u>						
No. Hunters	120	82	44	61	39%	800
No. Rec. Days	774	558	225	544	142%	3,304
Harvest	215	91	22	551	2405%	600
<u>LOWER BEAR RIVER</u>						
No. Hunters	83	91	62	48	-23%	1,500
No. Rec. Days	337	454	292	254	-13%	7,500
Harvest	154	185	69	59	-14%	1,800
<u>GREAT DIVIDE BASIN</u>						
No. Hunters	6	10	7	0	-100%	100
No. Rec. Days	12	10	15	0	-100%	500
Harvest	6	10	0	0	NA	50
<u>LOWER GREEN RIVER</u>						
No. Hunters	275	293	235	339	44%	475
No. Rec. Days	1,564	1,441	872	1,614	85%	2,375
Harvest	657	499	313	516	65%	380
<u>HAM'S/BLACK'S FORK</u>						
No. Hunters	137	76	134	96	-28%	370
No. Rec. Days	586	384	478	420	-12%	1,850
Harvest	315	137	222	144	-35%	444
<u>UPPER BEAR RIVER</u>						
No. Hunters	102	69	89	63	-29%	370
No. Rec. Days	366	235	312	306	-2%	1,665
Harvest	97	158	89	35	-61%	185
<u>LITTLE SNAKE RIVER</u>						
No. Hunters	12	25	9	0	-100%	100
No. Rec. Days	31	76	9	0	-100%	500
Harvest	35	163	9	0	-100%	50
<u>TOTALS FOR WESTERN REFERENCE AREA</u>						
No. Hunters	951	768	666	778	17%	4,565
No. Rec. Days	4,500	3,637	2,590	3,669	42%	22,244
Harvest	1,779	1,342	817	1,653	102%	4,447

^a Data includes all goose species and may include early season harvest information.

Source: Annual Report of Upland Game and Furbearer Harvest, WGFD, 2007-2013.

Table 5. Canada goose harvest and hunter activity during the regular season within the Central Reference Area of the RMP ^a.

	MEAN 2006-2010	2010	2011	2012	CHANGE BETWEEN 11 and 12	OBJECTIVE
<u>UPPER NORTH PLATTE RIVER</u>						
No. Hunters	109	112	68	106	56%	330
No. Rec. Days	445	626	589	444	-25%	1,485
Harvest	290	613	672	214	-68%	660
<u>BIGHORN RIVER</u>						
No. Hunters	910	955	696	879	26%	1,200
No. Rec. Days	5,550	6,367	3,742	6,510	74%	5,600
Harvest	5,139	8,191	3,049	11,147	266%	1,200
<u>YELLOWSTONE RIVER</u>						
No. Hunters	26	12	8	0	-100%	
No. Rec. Days	95	23	8	0	-100%	
Harvest	28	32	8	0	-100%	
<u>WIND RIVER</u>						
No. Hunters	426	444	332	309	-7%	1,200
No. Rec. Days	1,795	2,186	1,932	1,536	-20%	4,200
Harvest	2,140	2,776	1,759	1,991	13%	1,600
<u>SWEETWATER RIVER</u>						
No. Hunters	11	18	34	15	-56%	100
No. Rec. Days	31	77	328	30	-91%	450
Harvest	29	65	22	49	123%	60
<u>TOTALS FOR CENTRAL REFERENCE AREA</u>						
No. Hunters	1,482	1,541	1,138	1,309	15%	2,830
No. Rec. Days	7,916	9,279	6,599	8,520	29%	11,735
Harvest	7,626	11,677	5,510	13,401	143%	3,520

^a Data includes all goose species.

* Calculated as 66% of the Upper North Platte River Management Area.

Source: Annual Report of Upland Game and Furbearer Harvest, WGFD, 2007-2013.

Table 6. Mid-winter surveys of the RMP of Canada geese in Wyoming.

MANAGEMENT AREA	2009	2010	2011	2012	2013
Wind River	8,337	1,697	2,876	2,104	2,030
Big Horn River	7,461	8,349	13,403	7,007	21,587
Upper North Platte River	0	248	139	0	0
CENTRAL REFERENCE AREA	15,798	10,294	16,418	9,111	23,617
Snake River	99	70	133	60	69
Salt River	28	49	106	93	14
Lower Green River combined	213	18	256	133	UNK 117
Upper Green River	0	10	2	1	UNK
WESTERN REFERENCE AREA	340	147	497	287	200
TOTALS	16,138	10,441	16,915	9,398	23,817

NF= Not Flown

Source: WGFD data.

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SHORT GRASS PRAIRIE POPULATION OF CANADA GEESE

PERIOD COVERED: September 1, 2012 - August 31, 2013

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

BREEDING POPULATION

The Short Grass Prairie Population (SGPP) nests on Victoria and Jenny Lind Islands and on the Canadian mainland from Queen Maud Gulf west and south to the Mackenzie River and northern Alberta. The MWS index in 2013 was 256,300, 12% lower than the 2012 index. In 2013, the estimated spring population in the NWT was 176,700, a 15% decrease from 2012. Production is expected to be above average and the 2013 fall flight larger than that of 2012.

HARVEST

Harvest and hunter activity estimates for both Hi-Line and Short Grass Prairie Canada geese combined are summarized in Tables 2 and 3 of the previous section (JCR for the Hi-Line Population of Canada Geese). Proportions of HLP and SGPP geese harvested in the Central Flyway portion of Wyoming are listed in Table 1. A harvest objective has not been established for the SGPP. Harvest of this population increased last year. During the most recent 20-year period, 14% of the Canada geese harvested within the HLP range of Wyoming were SGPP geese. Canada geese from the Rocky Mountain Population are also present in the Central Reference Area in Wyoming.

MID-WINTER SURVEY

State and Federal agencies conduct the mid-winter waterfowl survey throughout the United States during the first two weeks of January. The purpose is to estimate continental waterfowl populations present during the winter period. Proportions of HLP and SGPP geese counted during January are summarized in Table 2. During the most recent 20-year period, 9% of the Canada geese counted within the HLP range were SGPP geese.

Ground surveys were begun in 1999 to classify large and small Canada geese in Carbon, Converse, Goshen, Natrona, and Platte counties (Table 3). Prior to 1999, samples consisting of at least 100 tail fans provided by hunters were used to estimate the percent of large and small Canada geese in the harvest and waterfowl surveys. This method was appropriate for harvest that occurred throughout the entire season. However, tail fan data are not appropriate for estimating composition of "snapshot" waterfowl surveys. Furthermore, selection bias by hunters may favor larger geese.

RECOMMENDATIONS

1. Continue ground classifications during the mid-winter waterfowl survey to estimate proportions of HLP and SGPP Canada geese that are present.
2. Support management based on a single population of arctic-nesting, white-cheeked geese.

Table 1. Derivation of Canada goose harvest within the HLP and SGP portion of Wyoming. ^a					
Year	Goose Harvest ^b	Percent Hi-Line	Number Hi-Line	Percent Short Grass	Number Short Grass
1993	9,466	96	9,087	4	379
1994	11,638	84	9,776	16	1,862
1995	19,219	83	15,952	17	3,267
1996	6,493	83	5,389	17	1,104
1997	16,553	82	13,573	18	2,980
1998	19,961	88	17,566	12	2,395
1999	13,064	83	10,843	17	2,221
2000	22,782	89	20,276	11	2,506
2001	17,831	78	13,908	22	3,923
2002	14,992	79	11,844	21	3,148
2003	15,918	90	14,326	10	1,592
2004	18,507	85	15,731	15	2,776
2005	43,622	84	36,642	16	6,980
2006	13,041	81	10,563	19	2,478
2007	11,370	88	10,006	12	1,364
2008	22,861	83	18,975	17	3,886
2009	15,785	96	15,154	4	631
2010	27,113	92	24,944	8	2,169
2011	14,594	91	13,281	9	1,313
2012	16,054	90	14,449	10	1,605
Averages	17,543	86	15,114	14	2,429
^a Percent HLP or SGP derived from CF wing bee data or ocular estimation. Tail fan data are representative of the entire dark goose season whereas ocular estimation is a one-time snapshot.					
^b Waterfowl management areas 1, 2, and 33% of 3.					
Source: USFWS DMBM Wingbee and WGFD harvest data.					

Table 2. Proportions of Hi-Line and Short Grass Prairie Canada geese counted during the mid-winter waterfowl survey, based upon wing bee data or ocular estimation.

Year	Goose Count	Percent Hi-Line	Number Hi-Line	Percent Short Grass	Number Short Grass
1994	44,228	96	42,459	4	1,769
1995	27,750	84	23,310	16	4,440
1996	44,238	83	36,718	17	7,520
1997*	72,439	95	68,817	5	3,622
1998	37,927	82	31,100	18	6,827
1999*	29,432	87	25,606	13	3,826
2000*	39,689	90	35,720	10	3,969
2001*	50,219	98	49,214	2	1,005
2002*	23,427	93	21,764	7	1,663
2003*	21,992	90	19,812	10	2,180
2004*	40,379	89	35,877	11	4,502
2005*	40,448	94	38,022	6	2,426
2006*	63,844	88	56,184	12	7,660
2007*	16,472	94	15,418	6	1,054
2008*	10,482	94	9,876	6	606
2009*	46,324	91	42,154	9	4,170
2010*	44,248	96	42,477	4	1,771
2011*	75,083	92	69,375	8	5,708
2012*	42,500	91	38,762	9	3,738
2013*	52,239	91.5	47,797	8.5	4,442
AVERAGES		91		9	

*Ocular estimate

Source: WGFD unpublished data.

Table 3. Ground classification of large and small geese in Goshen, Platte, Converse, Natrona and Carbon counties.

County	Year		LARGE	SMALL	TOTAL	%LARGE	%SMALL
Carbon							
	2009	NS	200	1	201	99.5	0.5
	2010						
	2011		147	0	147	100.0	0.0
	2012		0	0	0	0.0	0.0
	2013		0	0	0	0.0	0.0
Converse							
	2009		599	9	608	98.5	1.5
	2010		166	0	166	100.0	0.0
	2011		865	26	891	97.1	2.9
	2012		714	21	735	97.1	2.9
	2013		646	11	657	98.3	1.7
Goshen							
	2009		2633	310	2943	89.5	10.5
	2010		3130	110	3240	96.6	3.4
	2011		2403	240	2643	90.9	9.1
	2012		1316	202	1518	86.7	13.3
	2013		1911	281	2192	87.2	12.8
Natrona							
	2009		1081	35	1116	96.9	3.1
	2010		660	8	668	98.8	1.2
	2011		242	1	243	99.6	0.4
	2012		441	57	498	88.6	11.4
	2013		701	1	702	99.9	0.1
Platte							
	2009		1526	240	1766	86.4	13.6
	2010		1656	98	1754	94.4	5.6
	2011		1446	155	1601	90.3	9.7
	2012		482	5	487	99.0	1.0
	2013		640	70	710	90.1	9.9
Total							
	2009		6039	595	6634	91.0	9.0
	2010		5612	216	5828	96.3	3.7
	2011		5103	422	5525	92.4	7.6
	2012		2953	285	3238	91.2	8.8
	2013		3898	363	4261	91.5	8.5

NS - Not surveyed.

Source: WGFD unpublished data.

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WESTERN CENTRAL FLYWAY POPULATION OF LIGHT GEESE

PERIOD COVERED: September 1, 2012 - August 31, 2013

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

BREEDING POPULATION

The Western Central Flyway Population includes primarily lesser snow geese and a substantial proportion of Ross' geese. These geese breed in the central and western Canadian Arctic; large nesting colonies are present at Queen Maude Gulf and Banks Island. In 2013, spring phenology was approximately 9 days earlier than average, and the earliest on record, in the Queen Maud Gulf area. Nesting phenology in the Queen Maude Gulf Sanctuary was 2 days earlier compared to the long-term average and similar to last year. Phenology on Banks Island was average. Snow goose production is expected to be above average, a turnaround after several years of below-average production.

HARVEST

Light goose hunting regulations during the most recent 10-year period are summarized in Table 1. The light goose season has remained closed in the Pacific Flyway portion of Wyoming due to limited numbers of light geese present and the potential for accidental harvests of resident trumpeter swans. Light goose harvests within the Central Flyway portion of Wyoming are summarized in Table 2.

CONSERVATION ORDER

The Department implemented the light goose conservation order for the 13th consecutive year in 2012 (Tables 1, 2 and 3). Use of electronic callers and hunting one-half hour after sunset were allowed. However, Wyoming statute prohibits hunters from using unplugged shotguns capable of holding more than 3 shells. Participants were required to purchase a Conservation Order Special Management Permit and complete a survey card provided with the permit.

Based on the survey response, 103 hunters harvested 456 light geese. The survey was not refined enough to distinguish geese that were harvested with electronic callers from those shot after sunset. However, these special provisions did increase harvest. Participation and harvest decreased from last year, most likely the result of dry and warm weather during March and fewer young birds available to hunt.

MID-WINTER SURVEY

State and Federal agencies conduct the mid-winter waterfowl survey during the first two weeks in January to estimate the continental populations of wintering waterfowl throughout the United States. Mid-winter survey counts of the West Central Flyway light goose population are summarized in Table 4. Generally, very few light geese are present in Wyoming during December and January.

WCFP geese are surveyed annually in the U.S. portion of their winter range, and the entire range, which includes Mexico, is surveyed only once every 3 years. However, surveys in Mexico have not been conducted since 2009 due to sociopolitical unrest in that country. In the U.S. portion of the survey, 225,900 geese were counted in January 2013, 10% more than last year. Population indices have increased 6% per year during 2004-2013.

RECOMMENDATIONS

1. Continue to implement the light goose conservation order in Wyoming.
2. Continue to maintain liberal seasons and bag limits.

Table 1. Hunting regulations for light geese within the Central Flyway portion of Wyoming.

	HUNTING SEASON									
	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13
Regular Season Dates	10/4-12/31	10/2-12/31	10/1-12/31	10/7-1/7	10/6-1/1	10/4-1/1	10/3-12/27	10/2-12/26	10/1-12/25	10/6-12/30
	1/27-2/12	1/27-2/10	1/27-2/9	1/27-2/8	1/26-2/12	1/26-2/9	1/21-2/8	1/20-2/7	1/28-2/15	1/30-2/17
Total Days	107	107	107	107	107	107	107	107	107	107
Bag/Possession Limits	10/40	10/40	10/40	10/40	10/40	10/40	10/40	10/40	10/40	10/40
Conservation Order	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Season Dates	2/23-4/4	2/21-4/3	2/20-4/2	2/19-4/8	2/25-4/13	2/23-4/12	2/22-4/11	2/21-4/10	2/20-4/8	2/25-4/7
Bag/Possession Limits	20/none	20/none	20/none	20/none	20/none	20/none	20/none	20/none	20/none	20/none

Special Youth Waterfowl Hunting Days are included in total days, but not displayed.

Source: WGFD. Migratory game bird regulations.

Table 2. Light goose harvest within the Central Flyway portion of Wyoming.

Year	Wyoming Data ^a	FWS Data/Regular Season	Conservation Order
1993/94	N/D	0	
1994/95	N/D	133	
1995/96	N/D	0	
1996/97	N/D	299	
1997/98	529	266	
1998/99	1845	1811	
1999/00	1326	633	
2000/01	875	114	875
2001/02	3047	0	1215
2002/03	ND	0	1775
2003/04	ND	325	1364
2004/05	ND	0	1070
2005/06	ND	0	2622
2006/07	ND	0	928
2007/08	ND	43	1019
2008/09	ND	0	845
2009/10	ND	66	230
2010/11	ND	90	965
2011/12	ND	331	660
2012/13	ND	330	455

^aWyoming harvest data is for February and March only.

N/D - No data.

Source: USFWS Light geese in the Central Flyway June 2012 and Preliminary harvest estimates 2011 and 2012, and WGFD data.

Table 3. Harvest and hunter activity for the Wyoming 2013 light goose conservation order.				
	Season			
	February 25 - April 7			
Permits Sold (excludes known collector purchases)	133			
Total Survey Respondents	103			
% Responded	77%			
Active Hunters	103			
Total Days Hunted	346			
Days/Hunter	3.4			
Geese Harvested	436			
Geese Knocked Down, but not retrieved	20			
Total Harvest	456			
Harvest/Hunter	4.4			
Hunters using Electronic Callers	68			
Harvest by Hunters using Electronic Callers	318			
Average Harvest of Hunters using Callers	4.7			
Hunters Hunting After Sunset	37			
Harvest by Hunters Hunting After Sunset	68			
Average Harvest of After Sunset Hunters	1.8			
Hunters Using Callers and Hunting After Sunset	27			
% of Hunters Hunting in Goshen County	99.0			
Incomplete survey responses were treated as non-responses. Projected totals are the initial responses plus the nonresponse bias estimators. Non-bias estimation as applied here is the projection of second responses on to nonrespondents.				
For example, Active Hunters = (second respondents that hunted/second respondents)(permits analyzed - initial responses)				
Source: WGFD unpublished data.				

Table 4. Light geese counted during the mid-winter waterfowl survey in Wyoming.

Year	Geese
1975	0
1976	0
1977	0
1978	0
1979	0
1980	0
1981	0
1982	0
1983	0
1984	0
1985	0
1986	0
1987	0
1988	0
1989	0
1990	0
1991	1
1992	0
1993	0
1994	0
1995	0
1996	0
1997	188
1998	3
1999	1
2000	0
2001	1
2002	1
2003	1
2004	2
2005	3
2006	0
2007	1
2008	2
2009	4
2010	3
2011	6
2012	17
2013	0

Source: USFWS. Light geese in the CF March 2012 and WGFD mid-winter survey reports.

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ROCKY MOUNTAIN POPULATION OF GREATER SANDHILL CRANES

PERIOD COVERED: September 1, 2012 - August 31, 2013

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

INTRODUCTION

Since 1982, greater sandhill cranes (*Grus canadensis tabida*) have been hunted during September in the Salt River and Lower Bear River management areas. In 1986, a hunting season was initiated in the Farson area of the Lower Green River and another hunt was initiated in the Riverton Project within the Wind River Basin in 1987. A hunt area was established in Big Horn and Park Counties in 1996. In 2008 another hunt area was established in Uinta County and the Bear River Hunt Area in Lincoln County was expanded to include the Hams Fork Drainage. The crane hunts were started to reduce crop depredations by staging cranes and regulate population growth. Annual harvest levels for Wyoming are prescribed based on a harvest allocation formula in the *Management plan of the Pacific and Central Flyways for the Rocky Mountain Population of Greater Sandhill Cranes* (last revised in March, 2007). Based on shifts in the fall distribution of cranes, a smaller proportion of the crane population has been counted in Wyoming during fall surveys in recent years. Consequently, the harvest allocation available to Wyoming was reduced starting with the 2007 hunting season. During 2007-2010, the proportional reduction in the harvest allocation available to Wyoming was offset by an increase in the total allocation due to increasing crane numbers in the September survey and relatively good crane recruitment. Since then, the September count has declined (likely due to mistiming the counts), and Wyoming's allocation along with it.

A contingency plan was adopted to protect endangered whooping cranes (*Grus americana*), which occasionally commingle with sandhill cranes on fall staging areas. No whooping cranes have been observed in sandhill crane hunt areas, for at least 10 years.

POPULATION STATUS

The Fall Survey data from the Rocky Mountain population are summarized in Table 1. The 2006 survey was canceled because the U. S. Fish and Wildlife Service's survey aircraft had mechanical problems. However some surveys were completed by state personnel prior to the decision to cancel the survey by the U. S. Fish and Wildlife Service and those data are reported for the appropriate tables in this report. The 2012 count dropped to 15,417 cranes, the lowest population count since 1987. The 2011 and 2012 counts declined more than can be explained by harvest and normal mortality rates. It is likely the counts were mistimed and/or some cranes were distributed outside the count areas.

Spring weather conditions were abnormally dry and this weather pattern continued into the summer and fall. By September, conditions across the region were characterized as being in a moderate to extreme drought (Thorpe et al. 2012).

Annual production is surveyed by classifying the proportion of juveniles within the crane population staging in the San Luis Valley, Colorado in October. In 2010 the proportion of juveniles observed at the San Luis Valley staging area was 8.3%. The cold wet spring of 2010 in much of the Rocky Mountain West likely is responsible for the drop in crane recruitment. Crane recruitment dropped again to 6.6% in 2011, likely a result of the cool spring and above normal snow pack at higher elevations that delayed crane nesting and may have resulted in poor nest success or chick survival. The recruitment rate during the 2012 survey was 7.8%, 3% below the long-term (1972-2011) average of 8.1. In 2012, the habitat conditions were fair in the spring but drought conditions during the summer months might have led to reduced colt survival (Kruse et al. 2013).

SEPTEMBER PRE-MIGRATION STAGING SURVEYS

Results of September pre-migration surveys are summarized in Table 2 (Thorpe et al. 2012). Crane surveys on the primary fall staging areas in Wyoming are summarized in Table 3. The 2006 survey was cancelled due to mechanical problems with the survey aircraft used by the Service to count portions of western Wyoming and southeast Idaho. WGFD personnel completed some sections of the surveys in 2006 but flyway-wide data are incomplete. In 2012, 3,587 cranes were counted in RMP staging areas of central and western Wyoming. This was higher than the number observed in 2011 (2,978) and higher than the long term average for 1987-2011 of 3,159 cranes counted in the RMP areas of Wyoming.

Counts fluctuate annually in response to changes in population size, distribution, land use, areas surveyed, and visibility conditions during the counts. Drought conditions adversely affect chick production and survival and ultimately population size. Drought conditions, fall weather patterns, and long-term habitat changes caused by subdivision development and farming practices (changes in grain crop production) affect food availability and habitat selection in staging areas. These changes are thought to result in shifts in the annual and long term distribution of cranes counted in staging areas.

Crane counts are conducted in the Pacific flyway (western reference area) in mid-September after the crane hunting season has ended. However, informal late August counts of cranes flying off roosts in the upper Salt River and the Big Sandy/Eden Reservoirs suggest crane numbers in these two areas may be higher just prior to the hunts. Therefore, the decline in cranes counted during pre-migration staging surveys in the Salt River, Bear River, Uinta, and Farson hunt areas may not be representative of cranes actually present at the start of the crane hunt.

Early hunting seasons are designed to reduce crop depredation by shifting the fall distribution of cranes over time. The limited harvest has minimal impact on numbers of cranes that nest in Wyoming but crane hunts and the concurrent general early goose hunt in the Pacific Flyway portion of Wyoming may account for some changes in fall distribution (Rod Drewien, pers. com., Lockman et al. 1987). Some annual variation is also the result of the observers' ability to see cranes under various light and flying conditions, and whether the birds are aggregated in

flocks or widely dispersed in the survey areas. Since the fall survey is a key determinant of the harvest allocation required by the management plan, it is incumbent on all agencies to conduct adequate annual surveys.

The distribution of staging cranes has expanded. An area near Worland was added to the Bighorn Basin survey area in 2007. Crane numbers in the Bighorn Basin count blocks increased in 2012 and were stable in the Wind River Basin count blocks in the last 2 years. A substantial influx of cranes, presumably from Montana, occurs after the surveys are completed in both the Wind River Basin and Bighorn Basin areas (Table 3).

CRANE HARVEST

The Pacific and Central Flyway Management Plan for the Rocky Mountain Population of Sandhill Cranes allows for the regulated harvest of cranes when the population index exceeds 15,000, based on an average of the 3 most recent reliable surveys conducted on the fall pre-migration staging areas. A prescriptive model is used to allocate annual harvest among states. All the states hunting this population have benefited by the improved population status, which resulted in an increase in crane permits in 2004-2006. Wyoming's 2012 harvest allocation declined to 135 cranes due to a decline in population status in 2011. Recent regulations for hunting RMP cranes in Wyoming are summarized in Table 4. Permit numbers are calculated by multiplying the harvest allocation by 2, assuming 50% success, on average, for permit holders. The calculations for the 2012 harvest allocation for all states are shown in Appendix 1.

In 2011, the Pacific and Central Flyways revised the management plan to base the proportions of annual harvest allocated among the summer range states on the most recent 5-year average proportions of the fall flight counted in each summer range or producing state.

During the 2012 season, 216 hunters harvested 134 cranes in the 6 hunt areas in Wyoming. Permit success ranged from 0% in Area 5 (Uinta) to 66% in Area 3 (Farson). The harvest rate for active hunters ranged from 0.0 cranes per hunter in Area 5 (Uinta) to 0.8 cranes per hunter in Area 3 (Farson). Hunter success exceeded 50% in all hunt areas except Area 5 (Unita) (Table 5).

Table 6 summarizes crane harvest statistics from hunt areas in Wyoming. The 2012 harvest rate was 0.62 cranes per active hunter compared to 0.54 cranes per hunter in 2011. Harvest rates continue to fluctuate in the 6 hunt areas in Wyoming.

Changes in hunt area harvest rates appear to be a function of permit numbers and crane availability in any given year. Shifts in crane distribution are likely responsible for some reductions in harvest and hunter success. Land use changes including conversions from agriculture to subdivisions, changes in grain crop distribution, and reduced hunter access appear to be factors affecting crane availability and hunter success in some hunt areas, particularly in the Bear River and Star Valley hunt areas.

RECOMMENDATIONS

1. Continue to survey cranes on fall pre-migration staging areas.
2. Continue the mail survey to estimate harvest and hunter activity.
3. Work with the Central and Pacific Flyways to assure Wyoming receives a fair allocation of permits as a result of changes in the RMP Greater Sandhill Crane Management Plan. The allocation protocol in the management plan is intended to be revisited every 5 years and the average of the proportion of cranes counted in each state should be recalculated for the 5 year period from 2007-2011 to set the proportions used in the crane allocation formula for the next 5 years (2012-2016).
4. Continue monitoring to determine if the expansion of hunt area boundaries in the Bighorn Basin (Area 6) and Bear River (Area 1) produce more hunting opportunity and address depredation complaints as crane numbers increase and their fall distribution expands.
5. Continue monitoring to determine if creation of new Hunt Area 5 in Uinta County is creating additional hunting opportunity and addressing depredation complaints as crane numbers increase and their fall distribution expands in Wyoming. Continue reviewing population and harvest data to determine if this hunt area expansion is appropriate and should continue in the future.
6. Continue to monitor crane abundance and distribution in Natrona, Johnson, and Sheridan counties.

Table 1. Population data for the Rocky Mountain Population of Greater Sandhill Cranes, 1997-2012.

	September Total Pre-migration	% Juvenile Fall, San Luis Valley	Recruitment rate 5-Year Mean	Total Allowable Harvest
1997	18,036	9.7	8.5	632
1998	18,202	11.2	10.1	693
1999	19,501	8.4	9.9	974
2000	19,990	6.7	8.8	1,141
2001	16,559	5.8	7.0	1,175
2002	18,803	5.2	5.9	833
2003	19,523	7.1	6.0	668
2004	18,510	9.4	7.2	656
2005	20,865	10.8	9.1	906
2006	Cancelled	9.9	10.0	1,320
2007	22,822	8.3	9.7	1,320
2008	21,156	9.1	9.1	1,714
2009	20,321	11.5	9.6	1,940
2010	21,064	8.3	9.4	1,985
2011	17,494	6.6	8.8	1,777
2012	15,417	7.8	8.7	1,270

Table 2 September premigration staging area counts by state of the Rocky Mountain Population greater sandhill cranes during 1987, 1992, 1995-2005, 2007-2012.

Year	Colorado ^a	Idaho	Montana	Utah	Wyoming	Total
1987	1,443	10,686	1,447	1,578	2,327	17,481
1992	3,181	5,801	5,264	2,810	2,248	19,304
1995	2,284	6,864	3,681	1,528	1,671	16,028
1996	1,255	8,334	2,974	1,849	2,526	16,938
1997	1,604	8,132	3,595	2,450	2,255	18,036
1998	1,273	8,067	3,415	2,185	3,162	18,102
1999	1,102	8,761	3,141	2,292	4,205	19,501
2000	749	9,337	3,598	2,416	3,890	19,990
2001	666	7,160	4,585	1,522	2,626	16,559
2002	1,355	7,698	4,843	1,869	3,038	18,803
2003	745	7,822	4,964	2,546	3,446	19,523
2004	1,410	7,152	4,637	2,239	3,072	18,510
2005	1,052	7,668	5,588	2,646	3,911	20,865
2007	1,743	8,262	6,509	2,401	3,907	22,822
2008	1,080	6,123	6,419	3,708	3,826	21,156
2009	1,162	6,934	6,329	2,283	3,613	20,321
2010	985	5,776	7,335	3,242	3,726	21,064
2011	1,347	5,029	6,642	1,498	2,978	17,494
2012	413	3,432	5,876	2,109	3,587	15,417
Mean	1,308	7,318	4,781	2,272	3,159	18,838

^a Colorado counts include migrants that had arrived at the staging areas in the San Luis Valley.

Table 3. Surveys of primary fall staging areas used by the RMP of greater sandhill cranes in Wyoming, 2008-2012.

Primary Staging Area	Responsible Agency	Year and (Survey Date)	Total Count (Aerial or Ground)
Lower Bear River Valley	USFWS	2008 (9/15)	264 (aerial)
		2009 (9/15)	153 (Aerial)
		2010 (9/13)	488 (Aerial)
		2011 (9/13)	539 (Aerial)
		2012 (9/13)	490 (Aerial)
Star Valley (Salt River)	WGFD/USFWS	2008 (9/16)	234 (Aerial)
		2009 (9/17)	257 (Aerial)
		2010 (9/17)	127 (Aerial)
		2011(9/13)	198(Ground/Aerial)
		2012(9/13)	182(Ground/Aerial)
Farson-Eden	USFWS	2008(9/15)	1,957 (Aerial)
		2009 (9/14)	1,463 (Aerial)
		2010 (9/14)	1,297 (Aerial)
		2011 (9/12)	988 (Aerial)
		2012 (9/13)	1,665 (Aerial)
Boysen-Riverton (Wind River)	WGFD	2008 (9/16)	133 (Aerial)
		2009 (9/17)	345(Aerial)
		2010 (9/14)	235 (Aerial)
		2011 (9/13)	276 (Aerial)
		2012 (9/11)	277 (Aerial)
Greybull River Valley	WGFD	2008 (9/16)	481 (Aerial)
		2009 (9/16)	283 (Aerial)
		2010 (9/14)	454 (Aerial)
		2011 (9/13)	185 (Aerial)
		2012 (9/11)	166(Aerial)
Shoshone River Valley	WGFD	2008 (9/16)	196 (Aerial)
		2009 (9/16)	389 (Aerial)
		2010 (9/14)	470 (Aerial)
		2011 (9/13)	341 (Aerial)
		2012 (9/11)	446 (Aerial)

Table 3. Continued			
	Responsible	Year and	Total Count
Primary Staging Area	Agency	(Survey Date)	(Aerial or Ground)
Worland	WGFD		
		2008 (9/16)	201 (Aerial)
		2009 (9/16)	215(Aerial)
		2010 (9/14)	322 (Aerial)
		2011 (9/13)	96 (Aerial)
		2012 (9/11)	31 (Aerial)
Big Piney	USFWS		
		2008 (9/15)	138(Aerial)
		2009 (9/14)	91 (Aerial)
		2010 (9/14)	76 (Aerial)
		2011 (9/13)	14 (Aerial)
		2012 (9/13)	117 (Aerial)
Bridger Valley	WGFD		
		2008 (9/16)	42 (Ground)
		2009 (9/15)	51 (Ground)
		2010 (9/15)	75 (Ground)
		2011 (9/16,9/19)	105 (Ground)
		2012 (9/11-9/12)	103 (Ground)
Lonetree	WGFD		
		2008	NS
		2009	NS
		2010 (9/15)	0 (Ground)
		2011 (9/17)	0 (Ground)
		2012 (9/17)	0 (Ground)
Hams Fork	USFWS		
		2008 (9/15)	51 (Aerial)
		2009 (9/14)	90 (Aerial)
		2010 (9/13)	18 (Aerial)
		2011 (9/13)	10 (Aerial)
		2012 (9/13)	15 (Aerial)
Little Snake River Valley	WGFD		
		2008 (9/16)	0 (Ground)
		2009 (9/17)	2 (Ground)
		2010 (9/15)	0 (Ground)
		2011(9/13)	0 (Ground)
		2012(9/11)	0 (Ground)
Pinedale-Cora	USFWS		
		2008 (9/15)	0 (Aerial)
		2009 (9/14)	45 (Aerial)
		2010 (9/14)	2 (Aerial)
		2011 (9/13)	0 (Aerial)
		2012 (9/13)	3 (Aerial)

Table 3. Continued	Responsible	Year and	Total Count
Primary Staging Area	Agency	(Survey Date)	(Aerial or Ground)
Seedskadee NWR	USFWS		
		2008 (9/15-9/16)	0 (Ground)
		2009 (9/15-9/16)	4 (Ground)
		2010 (9/15)	4 (Ground)
		2011 (9/14)	6 (Ground)
		2012 (9/11)	0 (Ground)
Upper North Platte River	WGFD		
		2008 (9/16)	11 (Ground)
		2009 (9/17)	5 (Ground)
		2010 (9/15)	26 (Ground)
		2011 (9/13)	60 (Ground)
		2012 (9/11)	69 (Ground)
Jackson Hole	USF&WS		
		2008 (9/18)	118 (Ground)
		2009 (9/16)	220 (Ground)
		2010 (9/15)	132 (Ground)
		2011 (9/14)	69 (Ground)
		2012 (9/12)	23 (Ground)

Table 4 Recent Hunting Regulations for the RMP Sandhill Crane Hunt Areas in Wyoming

	YEAR									
HUNT AREA	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<u>1 Bear River</u>										
No. Permits	30	20	26	42	25	30	30	30	25	25
Season Dates (Sept.)	1-14	1-14	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8
Season Limit	1	1	1	1	1	1	1	1	1	1
<u>2 Salt River</u>										
No. Permits	30	20	26	42	26	25	31	30	25	15
Season Dates (Sept.)	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8
Season Limit	1	1	1	1	1	1	1	1	1	1
<u>3 Eden/Farson</u>										
No. Permits	45	45	56	94	60	85	106	105	95	60
Season Dates (Sept.)	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8	1-8
Season Limit	1	1	1	1	1	1	1	1	1	1
<u>4 Riverton</u>										
No. Permits	45	60	70	116	75	85	100	105	90	80
Season Dates (Sept.)	20-30	18-30	17-30	16-30	15-30	13-30	19-30	18-30	17-30	15-30
Season Dates (Oct.)	1-10	1-8	1-7	1-6	1-5	1-3	1-7	1-10	1-9	1-7
Season Limit	1	1	1	1	1	1	1	1	1	1
<u>5 Uinta</u>										
No. Permits						10	10	10	10	10
Season Dates (Sept.)						1-8	1-8	1-8	1-8	1-8
Season Limit						1	1	1	1	1
<u>6 Big Horn/Park</u>										
No. Permits	45	60	74	124	80	95	110	115	105	80
Season Dates (Sept.)	20-30	18-30	17-30	16-30	15-30	13-28	19-30	18-30	17-30	15-30
Season Dates (Oct.)	1-8	1-8	1-2	1	-	-	1-4	1-3	1-2	1-7
Season Limit	1	1	1	1	1	1	1	1	1	1

Table 5. Harvest and hunter activity for the 2012 hunting season for RMP of greater sandhill cranes.

	HUNT AREA						
	1	2	3	4	5	6	TOTALS/
	BEAR RIVER	SALT RIVER	FARSON	RIVERTON	UINTA	BIG HORN	AVERAGES
Harvest Allocation							135
Permits Issued	25	16	59	80	10	80	270
Active Hunters	23	13	49	59	10	62	216
Total Days Hunted	48	36	76	149	47	165	521
Days/Active Hunter	2.1	2.8	1.5	2.5	4.7	2.7	2.4
Adult Harvest	11	7	31	21	0	33	103
Juvenile Harvest	2	3	8	9	0	9	31
Unknown Age Harvest	0	0	0	0	0	0	0
Total Crane Harvest	13	10	39	30	0	42	134
Cranes per Active Hunter	0.57	0.77	0.80	0.51	0.00	0.68	0.62
Permit Success	52%	63%	66%	38%	0%	53%	50%
Cranes Knocked Down but not Retrieved	0	0	0	0	0	0	0
Note: Due to rounding and computer decimal loads, area estimates may not equal totals.							
Source: WGFD unpublished data.							

Table 6. Harvest statistics from RMP Greater Sandhill Crane hunts in Wyoming 2003-2012.

	YEAR									
HUNT AREA	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<u>1 Bear River</u>										
No. Hunters	24	15	24	18	21	27	24	20	25	23
Hunter Days	52	29	47	27	44	51	46	33	46	48
Days/Hunter	2.2	1.9	2	1.5	2.1	1.9	1.9	1.7	2.1	2.1
Harvest	4	12	14	12	9	17	18	11	9	13
Cranes/Hunter	0.17	0.76	0.58	0.67	0.43	0.63	0.75	0.55	0.41	0.57
<u>2 Salt River</u>										
No. Hunters	18	15	23	30	11	22	22	26	25	13
Hunter Days	49	48	59	87	29	45	54	109	61	36
Days/Hunter	2.7	3.3	2.6	3	2.6	2.1	2.5	4.2	2.4	2.8
Harvest	4	7	10	12	8	10	8	6	13	10
Cranes/Hunter	0.21	0.46	0.43	0.42	0.7	0.45	0.36	0.23	0.52	0.77
<u>3 Eden/Farson</u>										
No. Hunters	38	35	43	73	54	69	83	85	86	49
Hunter Days	62	65	82	135	103	137	152	151	171	76
Days/Hunter	1.6	1.9	1.9	1.9	1.9	2	1.8	1.8	2.0	1.5
Harvest	18	24	31	58	42	37	46	63	48	39
Cranes/Hunter	0.47	0.68	0.72	0.79	0.77	0.54	0.55	0.74	0.56	0.80
<u>4 Riverton</u>										
No. Hunters	33	55	48	83	65	70	73	91	71	59
Hunter Days	71	91	90	155	118	121	133	196	166	149
Days/Hunter	2.1	1.6	1.9	1.9	1.8	1.7	1.8	2.2	2.3	2.5
Harvest	27	37	28	55	45	45	58	46	42	30
Cranes/Hunter	0.83	0.66	0.58	0.66	0.69	0.64	0.79	0.51	0.59	0.51
<u>5 Uinta</u>										
No. Hunters						10	8	10	11	10
Hunter Days						20	22	13	37	47
Days/Hunter						2	2.8	1.3	3.4	4.7
Harvest						3	2	3	7	0
Cranes/Hunter						0.30	0.25	0.30	0.64	0.00
<u>6 Big Horn</u>										
No. Hunters	39	54	58	101	62	83	93	96	82	62
Hunter Days	114	110	152	276	124	191	217	192	228	165
Days/Hunter	2.9	2.1	2.6	2.6	2	2.3	2.3	2.0	2.8	2.7
Harvest	19	44	33	57	35	50	63	53	42	42
Cranes/Hunter	0.50	0.82	0.57	0.56	0.56	0.60	0.68	0.55	0.51	0.68
<u>TOTAL</u>										
Harvest Allocation	106	104	144	209	131	165	192	197	165	135
Permits Issued	195	206	254	401	266	330	387	395	352	270
No. Hunters	152	174	196	305	213	281	303	328	297	216
Hunter Days	348	343	430	687	418	562	624	695	709	521
Days/Hunter	2.3	2.0	2.2	2.3	2.0	2	2.1	2.1	2.4	2.4
Harvest	72	124	116	194	138	162	195	182	161	134
Cranes/Hunter	0.48	0.71	0.59	0.64	0.65	0.58	0.64	0.55	0.54	0.62

Appendix 1. 2012 Harvest Allocation based on the RMP Sandhill Crane Plan

2012 Crane Harvest Allocation

Allowable Harvest = $C \times P \times R \times L \times f$ where: C = Avg of **3** most recent, reliable **fall** population indices.
P = Avg proportion fledged chicks in **3** most recent years
R = 0.5 (estimated recruitment fledged chicks to breeding)
L = 0.8 (retrieval rate)
 $f = (C/16,000)^3$ (harvest rate adjustment)

$$C = \frac{20,321 + 21,064 + 17,494}{3} = 19,626$$

$$P = \frac{0.115 + 0.083 + 0.065}{3} = 0.088$$

$$f = (C/16,000)^3 = (19,626/16,000)^3 = 1.846$$

$$2012 \text{ Harvest Allocation} = 19,626 \times 0.088 \times 0.5 \times 0.8 \times 1.85 = \underline{\underline{1,270}}$$

$$2011 \text{ Harvest Allocation} = 20,847 \times 0.096 \times 0.5 \times 0.8 \times 2.212 = \underline{\underline{1,771}}$$

$$2010 \text{ Harvest Allocation} = 21,433 \times 0.096 \times 0.5 \times 0.8 \times 2.404 = \underline{\underline{1,979}}$$

$$2009 \text{ Harvest Allocation} = 21,614 \times 0.091 \times 0.5 \times 0.8 \times 2.465 = \underline{\underline{1,939}}$$

$$2008 \text{ Harvest Allocation} = 20,577 \times 0.095 \times 0.5 \times 0.8 \times 2.127 = \underline{\underline{1,663}}$$

$$2007 \text{ Harvest Allocation} = 19,633 \times 0.091 \times 0.5 \times 0.8 \times 1.848 = \underline{\underline{1,321}}$$

$$2006 \text{ Harvest Allocation} = 19,633 \times 0.091 \times 0.5 \times 0.8 \times 1.848 = \underline{\underline{1,321}}$$

$$2005 \text{ Harvest Allocation} = 18,945 \times 0.072 \times 0.5 \times 0.8 \times 1.660 = \underline{\underline{906}}$$

$$2004 \text{ Harvest Allocation} = 18,295 \times 0.060 \times 0.5 \times 0.8 \times 1.494 = \underline{\underline{656}}$$

2007 Allocation based on 2003, 2004, and 2005 fall counts

2008 Allocation based on 2004, 2005, and 2007 fall counts

2009 Allocation based on 2005, 2007, and 2008 fall counts

2010 Allocation based on 2007, 2008, and 2009 fall counts

2011 Allocation based on 2008, 2009, and 2010 fall counts

2012 Allocation based on 2009, 2010, and 2011 fall counts

	Percent Summer <u>Allotment</u>	Percent Winter <u>Allotment</u>	Percent Unused CO <u>Winter Allotment</u>	Total Percent <u>Allotment</u>	Total <u>Allocation</u>
Colorado ^a	3.31%	5.80%	---	3.31%	(42) ^b
Idaho	16.68%	---	---	16.68%	(212)
Montana	17.59%	---	---	17.59%	(223)
Wyoming	10.63%	---	---	10.63%	(135)
Utah	6.79%	2.70%	(0.40%)	9.89%	(126)
Arizona	---	5.80%	(0.86%)	6.66%	(85)
New Mexico	---	28.00%	(4.14%)	32.14%	(408)
Mexico	---	2.70%	(0.40%)	3.10%	(39)
TOTALS	55.00 %	45.00%	(5.80%)	100.00 %	1,270

^a Colorado's proposed season will occur in Moffat and Routt Counties, CO.

^b Colorado's total allotment of 42 cranes reflects the fact that only Summer Range portion of their allotment (3.31%) will be used.

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MID-CONTINENT POPULATION OF SANDHILL CRANES

PERIOD COVERED: September 1, 2012 - August 31, 2013

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

SURVEYS

No cranes affiliated with this population are thought to nest in Wyoming and they do not consistently stage in here in significant numbers. Most of the migration bypasses to the east of Wyoming. Accordingly, the Department does not conduct surveys of mid-continent sandhill cranes. Some flocks migrate through eastern WY and provide largely opportunistic hunting opportunities. The MCP crane population has remained stable and within established management objectives. A survey to determine subspecies and population affiliation of sandhill cranes in Natrona, Johnson, and Sheridan counties was initiated in 2013.

CRANE HARVEST

Recent hunting regulations and harvest statistics for mid-continent sandhill cranes are summarized in Table 1. During the 2012 season, 41 sandhill cranes were harvested. These cranes typically migrate through Wyoming in a few days and do not stage in predictable concentrations. The timing of migration varies from year to year. Consequently, most hunting is opportunistic.

During the 2009 hunting season, Wyoming was allowed to expand the hunt area to include that portion of Johnson County east of Interstate Highway 25 from the Natrona County line north to Interstate Highway 90 and east of Interstate Highway 90 from the intersection with Interstate Highway 25 to the Sheridan County line; and that portion of Sheridan County east of Interstate Highway 90.

There was concern that the crane harvest in the expanded hunt area would include an unknown proportion of RMP sandhill cranes. Wyoming was not required to verify subspecies composition in the field, but the Department was asked to track hunter activity and harvest. The USFWS indicated there would be no additional requirements provided harvest remained nominal and did not exceed 4-5 cranes per year. No hunter activity was reported in Johnson County during the first 3 years. Six hunters and no harvest were reported in 2012. A limited amount of hunter activity has occurred in Sheridan County. The five cranes estimated to be taken there in 2011 were the first crane harvests reported in the expanded portion of the general hunt area (Table 2). However, 30 sandhill cranes were taken in Sheridan County in 2012 and that exceeded the nominal harvest acceptable to the Pacific Flyway and the Service, resulting in a requirement to document subspecies composition based on track measurements in summer, 2013.

RECOMMENDATIONS

- 1). Continue the season structure as it presently exists.
- 2). Continue monitoring and reporting the crane harvest in Johnson and Sheridan counties.

Table 1. Harvest statistics for recent hunting seasons for Mid-continent sandhill cranes.

YEAR	NUMBER OF PERMITS ISSUED	NUMBER OF ACTIVE HUNTERS	RETRIEVED HARVEST	SEASON DATES	TOTAL DAYS
2003 ^a	50	10	7	09/13 - 11/09	58
2004 ^a	61	16	4	09/18 - 11/14	58
2005 ^a	68	24	16	09/17 - 11/13	58
2006 ^a	78	25	20	09/16 - 11/12	58
2007 ^a	58	19	20	09/15 - 11/11	58
2008 ^a	73	24	24	09/13 - 11/9	58
2009 ^a	62	67	8	09/19 - 11/15	58
2010 ^a	86	29	25	09/18 - 11/14	58
2011 ^a	86	41	20	09/17 - 11/13	58
2012 ^a	102	39	41	09/15 - 11/11	58
TEN-YEAR AVERAGE	72	29	19		

^a Preliminary

Source: USFWS. Status and harvest of sandhill cranes; mid-continent and Rocky Mountain populations, 2013.

Table 2. Harvest statistics for Area 7 hunting of Mid-continent sandhill cranes, 2012.

County	NUMBER OF PERMITS ISSUED	ACTIVE CRANE HUNTERS ^a	NUMBER OF DAYS AFIELD	RETRIEVED HARVEST
Cambell		0	0	0
Converse		0	0	0
Crook		2	13	0
Goshen		8	34	0
Johnson		6	13	0
Laramie		0	0	0
Niobrara		0	0	0
Platte		16	31	11
Sheridan		4	16	30
Weston		0	0	0
Unknown		4	3	0
TOTAL	102	40	110	41

Source: USFWS. Division of Migratory Bird Management, Branch of Harvest Surveys, 2013.

^a Totaling the individual county numbers results in more hunters than indicated in the total number of hunters, some hunters hunted in more than one county.

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CENTRAL MANAGEMENT UNIT OF MOURNING DOVES

PERIOD COVERED: September 1, 2012- August 31, 2013

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

CALL COUNT SURVEY

Call-counts have been the chief index used to monitor mourning dove population status throughout the U.S. since 1953. The entire state of Wyoming is within the Central Management Unit (CMU). Fourteen states comprise the CMU. Except for states participating in a reduced effort, the call-count survey was scheduled to end after the 2013 survey.

During the 2012 and 2013 surveys, Kansas, Nebraska, North Dakota and South Dakota had the highest average numbers of doves heard per route (range 37.6 to 47.8). Nationally, the highest average counts are often from Kansas and South Dakota. Wyoming was the only state averaging fewer than 10 doves heard per route. The remaining states reported intermediate numbers of doves heard.

Based on call frequency data, dove abundance has declined in the CMU over the last 10 years and over the last 48 years. Individual states with decreases over the most recent 10-year period included Nebraska, Oklahoma and Texas. During the 48-year period, no state had an increase in dove abundance. In Colorado, Minnesota, Missouri, Nebraska, Oklahoma, Texas, and Wyoming, dove abundance decreased over the 48-year period.

GPS locations of call-count survey (CCS) routes in Wyoming are shown in Fig. 5. Results of the 10 most recent call-count surveys are summarized in Table 1. This information is forwarded annually to the Office of Migratory Bird Management in Laurel, Maryland. Results are compiled in an Administrative Status Report available to the public by late July. In 2013, the numbers of doves heard was above, but the number seen per mile was below the 10-year average. The number of routes surveyed was lower than the 10-year average.

TRAPPING AND BANDING STUDIES

The National Mourning Dove Task Force recommended all states not currently banding mourning doves begin a banding program in 2008. Regional banding data provides specific population information for each management unit to support implementation of both the Mourning Dove National Strategic Harvest Management Plan and relevant interim harvest strategies. In 2004, the USFWS SRC required a mourning dove harvest management strategy for

each management unit. In 2009, Wyoming's banding goals for the 4 BCRs in the state combined was 191 after hatching year (AHY) and 202 hatching year (HY) (393 total) mourning doves each year.

In 2013, mourning doves were trapped and banded at two locations in BCR 18, Cheyenne and Downar Bird Farm. The banding goals for this BCR were 39 AHY and 41 HY for a total of 80. Bands were placed on 38 AHY, 343 HY, and 58 unknown aged birds for a total of 130. Mourning doves were trapped and banding at one location in BCR 16, Casper. The banding goals for this BCR were 3 AHY and 4 HY for a total of 7. Bands were placed on 2 AHY, 1 HY, and zero unknown aged birds for a total of 3. Mourning doves were trapped and banding at one location in BCR 10, Dan Speas Fish Rearing Station. The banding goals for this BCR were 64 AHY and 67 HY for a total of 131. Bands were placed on 9 AHY, 4 HY, and 3 unknown aged birds for a total of 16. See the Chapter 33 Permit 2013 Annual Report for mourning dove banding activities for more details. No recoveries of doves banded in Wyoming in 2013 have been reported to date.

HARVEST

Weather conditions in late August and early September greatly influence dove harvest in Wyoming. Weather conditions were moderate in 2012 and flocks of doves remained in the state throughout September and much of October.

The dove harvest and days per hunter increased in 2012 compared to data from the year prior (Table 2). The number doves harvested per hunter was below the most recent 10-year average. We continue to rely on State harvest estimates, as confidence intervals of HIP-derived estimates for hunter activity and harvest continue to be excessively wide (Table 3).

RECOMMENDATIONS

1. Discontinue participation in mourning dove call-count routes in Wyoming.
2. Maintain historic hunting opportunity.
3. If resources allow, participate in the national dove banding program.



Figure 5. Locations of mourning dove call-count survey routes in Wyoming.

Table 1. Average numbers of mourning doves heard and seen during call-count surveys, 2004-2013.

Year	Doves Heard	Doves Seen	Routes Run
2004	9.7	4.1	15
2005	6.8	2.5	16
2006	7.3	6.2	18
2007	6.9	4.8	15
2008	7.2	5.9	17
2009	6.8	4.9	17
2010	6.7	4.6	17
2011	6.6	4.4	15
2012	6.3	4.2	15
2013	6.5	4.7	14
Ten-Year Average	7.1	4.6	16

Total number of routes to survey per year was 18.

Source: USFWS CCS Data and Mourning Dove Populations Status Reports.

Table 2. Statewide mourning dove harvest in Wyoming.

YEAR	HUNTERS	HUNTER DAYS	DAYS/ HUNTER	DOVE HARVEST	DOVES/ HUNTER	BAG/ POSSESSION	SEASON LENGTH (DAYS)
2003	2,078	5,978	2.88	27,837	13.40	15/30	60
2004	2,471	7,645	3.09	32,142	13.01	15/30	60
2005	3,194	9,080	2.84	44,280	13.86	15/30	60
2006	2,461	7,141	2.90	32,807	13.33	15/30	60
2007	2,351	8,256	3.51	36,670	15.60	15/30	60
2008	2,315	7,482	3.23	29,994	12.96	15/30	60
2009	1,949	5,598	2.87	22,278	11.43	15/30	60
2010	2,528	8,096	3.20	28,906	11.43	15/30	70
2011	2,291	6,735	2.94	23,607	10.30	15/30	70
2012	2,263	7,260	3.21	28,402	12.55	15/30	70
TEN-YEAR AVERAGE	2,390	7,327	3.07	30,692	12.79		

Source: WGFD. Annual Report of Upland Game and Furbearer Harvest, 2004-2013.

Table 3. HIP estimates of mourning dove harvest and hunter activity in Wyoming.

YEAR	ACTIVE HUNTERS	DAYS AFIELD	DAYS/ HUNTER	DOVE HARVEST	HARVEST/ HUNTER
2003 ^a	3,000+/-40%	7,400+/-49%	2.47	39,600+/-76%	13.1+/-86%
2004 ^a	3,200+/-27%	8,700+/-34%	2.72	43,700+/-46%	13.7+/-53%
2005 ^a	2,500+/-27%	6,600+/-27%	2.64	34,100+/-31%	13.6+/-41%
2006 ^a	2,300+/-29%	6,500+/-36%	2.83	29,500+/-37%	12.9+/-47%
2007 ^a	4,000+/-20%	8,800+/-24%	2.20	42,600+/-27%	10.6+/-33%
2008 ^a	2,500+/-25%	5,900+/-33%	2.36	30,100+/-36%	11.9+/-44%
2009 ^a	2,300+/-27%	5,800+/-31%	2.52	20,600+/-31%	8.8+/-41%
2010 ^a	2,700+/-26%	7,100+/-32%	2.63	32,100+/-36%	12.0+/-45%
2011 ^a	2,700+/-30%	5,100+/-38%	1.89	25,000+/-52%	9.3+/-60%
2012 ^a	2,700+/-32%	6,300+/-38%	2.33	25,300+/-40%	9.3+/-51%
TEN-YEAR AVERAGE	2,790	6,820	2.46	32,260	11.52

Source: USFWS. HIP final and preliminary^a harvest estimates.

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CENTRAL MANAGEMENT UNIT OF COMMON SNIPE

PERIOD COVERED: September 1, 2011 - August 31, 2012

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

POPULATION SURVEY

Based on the most recent data from the North American breeding bird survey, snipe populations slightly increased in the United States and in Canada from 1966-2011, although snipe decreased in Wyoming during the same period.

HARVEST

Snipe hunting and harvest in Wyoming have varied markedly during the past 10 years (Table 1). The WGFD discontinued the state survey of snipe harvest and hunter activity after 2009. Refer to prior Job Completion Reports for state harvest data. Confidence intervals of HIP-derived estimates continue to be excessively wide.

RECOMMENDATIONS

1. Maintain historic hunting opportunity.
2. Continue to support wetlands projects that provide habitat for common snipe.

Table 1. HIP estimates of snipe harvest and hunter activity in Wyoming.

YEAR	ACTIVE HUNTERS	DAYS AFIELD	DAYS/ HUNTER	SNIPES HARVEST	SEASONAL SNIPES HARVEST/ HUNTER
2003 ^a	200+/-92%	400+/-92%	2.00	800+/-143%	3.8+/-170%
2004 ^a	300+/-74%	500+/-66%	1.67	400+/-68%	1.4+/-101%
2005 ^a	100+/-102%	300+/-90%	3.00	400+/-152%	2.8+/-183%
2006 ^a	100+/-142%	300+/-174%	3.00	100+/-170%	1.7+/-222%
2007 ^a	100+/-172%	100+/-136%	1.00	200+/-182%	2.8+/-250%
2008 ^a	100+/-130%	200+/-109%	2.00	300+/-133%	1.8+/-186%
2009 ^a	<50+/-71%	<50+/-92%	1.00	100+/-94%	6.8+/-118%
2010 ^a	400+/-89%	600+/-92%	1.50	1,200+/-129%	3.2+/-157%
2011 ^a	100+/-184%	200+/-174%	2.00	400+/-179%	4.1+/-256%
2012 ^a	300+/-70%	600+/-78%	2.00	600+/-87%	1.9+/-112%
AVERAGES	175	325	1.92	450	3.00

Source: USFWS. HIP final and preliminary^a harvest estimates.

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CENTRAL MANAGEMENT UNIT - VIRGINIA AND SORA RA ILS

PERIOD COVERED: September 1, 2012 - August 31, 2013

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

POPULATION SURVEY

Populations of Virginia rail have declined in some locations, particularly the Midwest and Northeast where wetland losses and degradation have been severe. Based on the most recent data from the North American breeding bird survey, Virginia rail populations have generally increased in the United States and Canada from 1966-2011, but decreased in Wyoming over the same period. During the same period, sora rails increased in Wyoming, the United States, and Canada. Soras are the most abundant and widely distributed of the North American rails.

HARVEST

Rail harvest and hunting in Wyoming remained low during the past 10 years (Table 1). The WGFD discontinued the state survey of rail harvest and hunter activity after 2009. Refer to prior Job Completion Reports for state harvest data. Confidence intervals of HIP-derived estimates continue to be excessively wide.

RECOMMENDATIONS

1. Maintain historic hunting opportunity.
2. Continue to support wetlands projects that provide habitat for rails.

Table 1. HIP estimates of rail harvest and hunter activity in Wyoming.

YEAR	ACTIVE HUNTERS	DAYS AFIELD	DAYS/ HUNTER	RAIL HARVEST	SEASONAL RAIL HARVEST/ HUNTER
2003 ^a	0	0	0.00	0	0
2004 ^a	<50+/-153%	<50+/-153%	1.00	<50+/-153%	1.0+/-216%
2005 ^a	0	0	0.00	0	0
2006 ^a	0	0	0.00	0	0
2007 ^a	0	0	0.00	0	0
2008 ^a	<50+/-160%	<50+/-160%	1.00	<50+/-160%	1.0+/-227%
2009 ^a	0	0	0.00	0	0
2010 ^a	<50+/-155%	<50+/-155%	1.00	0	0
2011 ^a	0	0	0.00	0	0
2012 ^a	<50+/-150%	<50+/-150%	1.00	0	0
AVERAGE	20	20	0.40	10	0.2

Source: USFWS. HIP final and preliminary^a harvest estimates.

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Rails – Central Management Unit

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AMERICAN COOT POPULATION

PERIOD COVERED: September 1, 2012 - August 31, 2013

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

POPULATION SURVEY

Based on the most recent data from the North American breeding bird survey, the coot population was stable throughout the United States and increased in Canada from 1966-2011, but decreased in Wyoming over the same period.

HARVEST

The number of coot hunters, harvest decreased, and hunter days increased last year (Table 1). The WGFD discontinued the state survey of American coot harvest and hunter activity after 2009. Refer to prior Job Completion Reports for state harvest data. For the most part, coots are not actively hunted in Wyoming and most harvest is incidental to other types of waterfowl hunting. Confidence intervals of HIP-derived estimates continue to be excessively wide.

RECOMMENDATIONS

1. Maintain historic hunting opportunity.

Table 1. HIP estimates of coot harvest and hunter activity in Wyoming.

YEAR	ACTIVE HUNTERS	DAYS AFIELD	DAYS/ HUNTER	COOT HARVEST	SEASONAL COOT HARVEST/ HUNTER
2003 ^a	200+/-102%	400+/-138%	2.00	200+/-147%	1.3+/-179%
2004 ^a	100+/-161%	100+/-153%	1.00	200+/-119%	2.9+/-200%
2005 ^a	100+/-194%	100+/-194%	1.00	100+/-194%	1.0+/-275%
2006 ^a	100+/-125%	500+/-171%	5.00	900+/-179%	9.4+/-219%
2007 ^a	<50+/-166%	<50+/-166%	1.00	<50+/-166%	1.0+/-234%
2008 ^a	200+/-111%	200+/-111%	1.00	200+/-195%	1.0+/-224%
2009 ^a	<50+/-106%	<50+/-112%	1.00	<50+/-195%	4.5+/-154%
2010 ^a	200+/-127%	200+/-108%	1.00	600+/-115%	3.3+/-171%
2011 ^a	200+/-129%	500+/-148%	2.50	100+/-124%	0.5+/-179%
2012 ^a	400+/-65%	1800+/-87%	4.50	3200+/-134%	9.2+/-149%
AVERAGE	160	390	2.00	560	3.4

Source: USFWS. HIP final and preliminary^a harvest estimates.

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American Coot

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AMERICAN CROW

PERIOD COVERED: September 1, 2012 - August 31, 2013

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

POPULATION SURVEY

Based on the North American breeding bird survey trend results, crows have increased from 1996-2011 in Wyoming and throughout the United States, but decreased in Canada.

HARVEST

Recent crow seasons are summarized in Table 1. The crow harvest and hunter activity are unknown in Wyoming. Since a license is not required to hunt crows, there is no means to identify a sample frame for a harvest survey. The limited hunting that takes place has had essentially no impact on crow populations overall.

RECOMMENDATIONS

1. Maintain hunting opportunity for recreation and to assist with depredation control.

Table 1. Recent crow hunting seasons in Wyoming.

YEAR	SEASON DATES	BAG/POSSESSION LIMITS
2003	November 1 - February 28	None/None
2004	November 1 - February 28	None/None
2005	November 1 - February 28	None/None
2006	November 1 - February 28	None/None
2007	November 1 - February 28	None/None
2008	November 1 - February 28	None/None
2009	November 1 - February 28	None/None
2010	November 1 - February 28	None/None
2011	November 1 - February 28	None/None
2012	November 1 - February 28	None/None

Source: WGFD, Migratory Game Bird Regulations.

Bibliography American Crow

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TRUMPETER AND TUNDRA SWAN POPULATIONS

PERIOD COVERED: September 1, 2012- August 31, 2013

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

The Migratory Game Bird section expends time addressing swan issues, especially through the Flyway process. However, the Nongame section oversees the trumpeter swan program. Swans are not hunted in Wyoming. Refer to Nongame completion reports for swan information.

WATERFOWL NESTING STRUCTURES

PERIOD COVERED: September 1, 2012 - August 31, 2013

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

It is our intent to complete a comprehensive inventory for inclusion in the 2014 JCR. The report will contain an inventory of structures and their condition in each region, including use by waterfowl and recent and anticipated structure maintenance and management. The report will identify the structures that will continue to be maintained.

RECOMMENDATION:

1. Continue to update goose structure database.
2. Complete the nesting structure status report.
3. Retain a manageable number of effective structures and provide adequate maintenance.

BUMP-SULLIVAN MANAGED GOOSE HUNT

PERIOD COVERED: September 1, 2012 - August 31, 2013

PREPARED BY: Larry Roberts, Migratory Game Bird Biologist

RESULTS:

INTRODUCTION

Springer/Bump-Sullivan Reservoir and Table Mountain Wildlife Habitat Management Areas (WHMA) are the principal public goose hunting areas in Goshen County. The Bump-Sullivan area has been a popular goose hunting area for over 50 years. A Managed Goose Hunt was begun there during the 1993-94 season to reduce competition among hunting parties and improve the quality of their hunt.

Due to recent drought conditions and lack of water in Springer and Bump-Sullivan reservoirs, goose hunting opportunities and interest have declined within the managed hunt boundaries. For the 2011/12 dark goose hunting season in Goshen County the WGFD decided not to require a permit in order to participate in the Bump-Sullivan Managed Goose Hunt. This decision was based on a low participation rate the previous few years. Hunters were not required to register in any way prior to goose hunting in the managed goose hunt area. However, hunters were (and are) still required to hunt only from the established pits and blinds. Pit/blind selection was first-come-first-serve. The hunt will continue to be operated on a first-come, first-served basis until such time as demand may rise again to the point that access needs to be managed through a permitting system.

RECOMMENDATIONS

1. Support efforts to supply water to Bump-Sullivan Reservoir.
2. Annually mow a path to each pit and the parking areas. This reduces the effort required to haul decoys and equipment and creates a path to each pit that is easy to follow in the dark prior to shooting hours.
3. Continue annual pit maintenance.
4. Replace lower section of pits as needed.